

# **Dialect Variation and Change Among Twice Migrants**

## **A Sociophonetic Study of the East African Indian Community in Leicester, UK**

Thesis  
presented to the Faculty of Arts  
of  
the University of Zurich  
for the degree of Doctor of Philosophy

by Claudia Rathore-Nigsch  
of St. Gallen-Tablat (SG)

Accepted in the spring semester 2013 on the recommendation  
of Prof. Dr. D. Schreier and Prof. Dr. V. Dellwo

Zurich, 2015



To my parents, Brigitte and Jürg Nigsch, who have always been there for me.

To my son, Ranvir, whose smile lights up my life every day.



## Table of Contents

List of Maps	vi
List of Tables	vi
List of Figures	viii
Acknowledgements	xi
<b>1. Introduction</b>	<b>1</b>
1.1 The research field: English in the Indian diaspora	1
1.2 The research potential of East African Indians in Leicester	5
1.3 Indian English, East African English and East Midlands English	7
1.4 Aims and organisation of the present study	11
<b>2. English in the Indian diaspora</b>	<b>14</b>
2.0 Introduction	14
2.1 English in the Indian diaspora: Britain	14
2.1.1 Crossing and stylisation phenomena	15
2.1.2 Variation and change in British Asian Englishes	17
2.1.3 The impact of British Asians on local British English	
Dialects	28
2.2 English in the Indian diaspora: beyond Britain	37
2.3 Summary	39
<b>3. Sociohistorical background</b>	<b>41</b>
3.0 Introduction	41
3.1 Leicester's ethnic diversity	41
3.2 The Indian diaspora in East Africa	46
3.2.1 Pre-colonial times	46
3.2.2 Colonial era	49
3.2.2.1 Economic significance	54
3.2.2.2 Religious composition and communalism	58
3.2.2.3 Linguistic make-up	61
3.2.3 Post-independence period	64

3.3 The East African Indian diaspora in Leicester	67
3.4 Summary	77
<b>4. The linguistic variables</b>	<b>78</b>
4.0 Introduction	78
4.1 Postvocalic /r/	78
4.1.1 Postvocalic /r/ in prepausal and preconsonantal position: (non-)rhoticity	78
4.1.2 Word-final /r/ before vowels: linking /r/ and intrusive /r/	82
4.1.3 Postvocalic /r/ in the input varieties	84
4.1.3.1 Indian English	84
4.1.3.1.1 Linguistic constraints	87
4.1.3.1.2 Social and stylistic constraints	88
4.1.3.2 East African English	91
4.1.3.3 East Midlands English	92
4.1.4 Postvocalic /r/: summary	93
4.2 The vowels: FOOT, STRUT and NURSE	94
4.2.1 FOOT	94
4.2.2 STRUT	95
4.2.3 NURSE	98
4.2.4 FOOT, STRUT and NURSE in the input varieties	100
4.2.4.1 Indian English	100
4.2.4.2 East African English	104
4.2.4.3 East Midlands English	106
4.2.5 The vowels: summary	111
4.3 Chapter summary	112
<b>5. Method</b>	<b>113</b>
5.0 Introduction	113
5.1 Data collection and participants	113
5.2 Postvocalic /r/: auditory analysis	117
5.2.1 Token selection	117
5.2.2 Coding the dependent variable	119

5.2.3 Coding the independent variables	120
5.3 Vowels: acoustic analysis	121
5.3.1 Token selection	121
5.3.2 Formant and duration measurements	124
5.3.3 Vowel normalisation	126
5.3.4 Coding the independent variables	131
5.4 Statistical analysis: mixed-effects modelling	132
5.4.1 Postvocalic /r/: generalised linear (logistic) mixed-effects modelling	134
5.4.2 Vowels: linear mixed-effects modelling	136
5.5 Summary	137
<b>6. Results: postvocalic /r/</b>	<b>138</b>
6.0 Introduction	138
6.1 Variation across generations	138
6.1.1 Results	138
6.1.2 Discussion	142
6.1.2.1 First generation	142
6.1.2.2 Second generation	146
6.1.2.3 First and second generation compared	148
6.2 Variation within the first generation	149
6.2.1 Results	150
6.2.2 Discussion	160
6.3 Summary	165
<b>7. Results: FOOT, STRUT and NURSE</b>	<b>167</b>
7.0 Introduction	167
7.1 Results	167
7.1.1 Vowel quality	167
7.1.1.1 Non-normalised data	167
7.1.1.2 Evaluation of the three normalisation techniques	173
7.1.1.3 Linear mixed-effects regression analyses for F1 and F2	177

7.1.2 Vowel duration	191
7.1.2.1 Untransformed and log-transformed data	191
7.1.2.2 Linear mixed-effects regression analysis for vowel duration	195
7.2 Discussion	200
7.2.1 Vowel quality	201
7.2.1.1 First generation	201
7.2.1.2 Second generation	213
7.2.2 Vowel duration	216
7.2.2.1 Gender-related variation	216
7.2.2.2 First generation	219
7.2.2.3 Second generation	223
7.3 Summary	224
<b>8. Dialect variation and change among East African Indians in Leicester: the broader picture</b>	<b>226</b>
8.0 Introduction	226
8.1 Summary of the study's findings	226
8.1.1 First generation	226
8.1.2 Second generation	229
8.2 Dialect variation and change among East African Indians in Leicester: the broader picture	231
8.2.1 First generation	231
8.2.2 Second generation	234
8.3 Summary	239
<b>9. Conclusion</b>	<b>240</b>
<b>10. References</b>	<b>245</b>



<b>Appendix I - Number of FLEECE, FOOT, NURSE, START, STRUT and TRAP tokens by gender and generation</b>	<b>262</b>
<b>Appendix II ó Boxplots of the Lobanov-normalised F1 and F2 values of FOOT, STRUT and NURSE (by gender and generation)</b>	<b>263</b>
<b>Appendix III ó Mean F1 and F2 frequencies of FLEECE, FOOT, NURSE, START, STRUT and TRAP by gender and generation (Hz)</b>	<b>265</b>
<b>Appendix IV ó Mean durations of FLEECE, FOOT, NURSE, START, STRUT and TRAP by gender and generation (in ms)</b>	<b>266</b>

## List of Maps

Map 3.1 Leicester (adapted from Google Maps 2012).	42
Map 3.2 Spatial distribution of the Leicester Hindu community (source: Census 2001, from Roberts-Thomson 2008: 8).	44
Map 3.3 Spatial distribution of the Leicester Muslim community (source: Census 2001, from Roberts-Thomson 2008: 9).	44
Map 3.4 North-western India (1890-1947). Map showing the regions of origins of East African Indians (from Gregory 1992, reprinted in Gregory 1993: 11)	48
Map 3.5 British East Africa in 1960 (from Gregory 1992, reprinted in Gregory 1993: 42).	48
Map 4.1 Present-day distribution of postvocalic /r/ in the British Isles (from Hughes et al. 2005: 64).	92
Map 4.2 The modern northern and southern dialect areas of England, based on the pronunciation of <i>but</i> as <i>õButö</i> [bat] vs. <i>õBoottö</i> [but] (adapted from Trudgill 1999: 54).	108

## List of Tables

Table 3.1 Leicester population by ethnic group (source: Census 2011, table KS201EW; ONS 2012).	43
Table 3.2 Ethnic minority languages in Leicester (source: Leicester City Council, date unknown).	45
Table 3.3 Indian population in East Africa 1921-2000 (from Oonk 2006: 256).	51
Table 3.4 Origins of Ugandan Indian teachers, 1960 (from Gregory 1993: 231).	64
Table 3.5 Asian population in Leicester, 1951, 1961 and 1971 (based on census data; from Phillips 1981: 102).	68
Table 3.6 Asian communities in Leicester, 1978 (source: Leicester Council for Community Relations; in Phillips 1981: 104).	70

Table 3.7 Percentage of spoken English levels among Indians and East African Indians, 1974 (from Smith 1976, in Robinson 1993: 235).	71
Table 5.1 Social characteristics of the participants.	115
Table 6.1 Production of postvocalic /r/ by generation.	139
Table 6.2 Production of rhotic tokens by following phonological environment and generation.	140
Table 6.3 Phonetic realisation of rhotic tokens by generation.	141
Table 6.4 Percentage of rhotic tokens by speaker.	151
Table 6.5 First-generation speakers' production of postvocalic /r/ by gender.	153
Table 6.6 Results of the mixed-effects logistic regression analysis estimating the effects of following phonological environment, gender and age on first-generation East African Indians' production of rhotic tokens.	155
Table 6.7 First-generation speakers' production of rhotic tokens by age and gender.	162
Table 7.1 Number of FOOT, NURSE and STRUT tokens by gender and generation.	168
Table 7.2 Results of the linear mixed-effects regression analysis estimating the influence of vowel, generation and gender on Lobanov-normalised F1.	179
Table 7.3 Summary of the fixed-effect estimates from the second series of follow-up analyses for Lobanov-normalised F1, investigating the effect of vowel and generation for each gender separately.	182
Table 7.4 Results of the linear mixed-effects regression analysis estimating the influence of vowel, generation and gender on Lobanov-normalised F2.	185
Table 7.5 Summary of the fixed-effect estimates from the follow-up analyses for Lobanov-normalised F2, examining the effect of vowel and generation.	187
Table 7.6 Results of the linear mixed-effects regression analysis estimating the influence of vowel, generation and gender on vowel duration (log-transformed).	196

Table 7.7 Summary of the fixed-effect estimates from the follow-up analyses for vowel duration (log-transformed), examining the effect of vowel and generation.	198
Table 7.8 Proportional differences between the mean durations of FOOT, STRUT and NURSE by generation and gender.	219

## List of Figures

Figure 3.1 Kenyan ethnic communities by occupation, 1960s (from Republic of Kenya, 'Employment and Earnings in the Modern Sector, 1968-1972', 1972; in Oonk 2006: 257).	56
Figure 3.2 Leicester City Council advertisement in the <i>Ugandan Argus</i> advising Ugandan Asians not to settle in Leicester, 15 September 1972 (from Marett 1989: 39).	69
Figure 4.1 Network diagram displaying the phonetic similarity of 20 language varieties (from McMahon et al. 2007: 136).	80
Figure 4.2 The historical development of Middle English short /u/ and long /o:/ (from Lass 1999: 90).	97
Figure 4.3 The historical development of the NURSE vowel (from Lass 1999: 113).	99
Figure 5.1 Spectrogram of a STRUT token (labelled 0Vö) showing the proportion of the vowel from which formant frequencies were measured and averaged, i.e. the middle 50% of the vowel duration.	125
Figure 6.1 Production of postvocalic /r/ by generation.	139
Figure 6.2 Production of postvocalic /r/ by following phonological environment and generation.	140
Figure 6.3 Phonetic realisation of rhotic tokens by generation (including linking /r/ tokens).	142
Figure 6.4 Production of postvocalic /r/ by speaker.	151
Figure 6.5 First-generation speakers' production of postvocalic /r/ by gender.	153
Figure 6.6 First-generation speakers' production of postvocalic /r/ by age.	154

Figure 6.7 Mean predicted probabilities and observed proportions of rhotic tokens.	160
Figure 7.1 Boxplot of the F1 values of FOOT, STRUT and NURSE for first- and second-generation female speakers (in Hertz).	169
Figure 7.2 Boxplot of the F2 values of FOOT, STRUT and NURSE for first- and second-generation female speakers (in Hertz).	169
Figure 7.3 Boxplot of the F1 values of FOOT, STRUT and NURSE for first- and second-generation male speakers (in Hertz).	170
Figure 7.4 Boxplot of the F2 values of FOOT, STRUT and NURSE for first- and second-generation male speakers (in Hertz).	170
Figure 7.5 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (in Hertz).	172
Figure 7.6 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (Bark-normalised).	173
Figure 7.7 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (Lobanov-normalised).	174
Figure 7.8 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (modWatt&Fabricius-normalised).	174
Figure 7.9 Residual diagnostic plots of the linear mixed-effects regression model for F1 (cf. table 7.2).	190
Figure 7.10 Residual diagnostic plots of the linear mixed-effects regression model for F2 (cf. table 7.4).	190
Figure 7.11 Boxplot of the duration values of FOOT, STRUT and NURSE for first- and second-generation female speakers (in ms).	193
Figure 7.12 Boxplot of the duration values of FOOT, STRUT and NURSE for first- and second-generation male speakers (in ms).	193
Figure 7.13 Density and quantile-quantile plots showing the distribution of untransformed and log-transformed duration values.	194
Figure 7.14 Residual diagnostic plots of the linear mixed-effects regression model for log-transformed vowel duration (cf. table 7.6).	200

Figure 7.15 Mean F1 and F2 values of STRUT and NURSE for first-generation female and male speakers (Lobanov-normalised), based on the original sample (on the left) and on a reduced sample without very short and pre-nasal tokens (on the right).	204
Figure 7.16 Mean F1 and F2 values of FOOT, STRUT and NURSE for first-generation female and male speakers (Lobanov-normalised).	205
Figure 7.17 F1-F2 ellipse plot of the monophthongal vowels produced by a Hindi L1 speaker of Indian English (in Hertz; from Maxwell & Fletcher 2009: 60).	206
Figure 7.18 Mean F1 and F2 values of Gujarati English and Tamil English monophthongs, represented by Xs and triangles, respectively (in Bark units; from Wiltshire & Harnsberger 2006: 98).	206
Figure 7.19 Mean F1 and F2 values of Black Kenyan English vowels (Lobanov-normalised; from Hoffmann 2011: 162).	209
Figure 7.20 The monophthongal vowels of female and male speakers of hybrid Leicestershire-SSBE (mean values, Lobanov-normalised). Source: Evans & Iverson (2007); the raw formant values were kindly provided by Evans (p.c. 2011, 2012).	211
Figure 7.21 Mean F1 and F2 values of FOOT, STRUT and NURSE for second-generation female and male speakers (Lobanov-normalised).	213

## Acknowledgements

Research projects like this one are seldom, if ever, solo tasks. Over the past years, a number of people have encouraged and assisted me in the writing of this dissertation. Their contributions did not only prove essential to the completion of the study but also made the journey a most rewarding experience, and I would like to express my gratitude for their support here. First of all, a particularly heartfelt thank you goes to my main supervisor Daniel Schreier, who gave me the opportunity to undertake this research project in the first place and carefully guided me through its highs and lows. I am greatly indebted to him for his insightful comments and inspiring suggestions, for the patience and understanding he showed in the face of obstacles, and for his friendship and good sense of humour. I also wish to thank my second supervisor, Volker Dellwo, who entered the project at a later stage but without whose support the end product would be radically different from what it is now. I am deeply grateful to him for sharing his methodological expertise with me, for writing the script that considerably facilitated the acoustic analysis and, above all, for the many stimulating ideas he gave me during our long discussions of the project.

Then, I owe an enormous debt of gratitude to the people in Leicester who offered their assistance during my two fieldwork trips. The study might never have got off the ground without the help of Tim Haq and Bill Law from East Midlands Economic Network, who showed me around the city when I first arrived and kindly provided a great number of contacts to the local East African Indian community. Of course, the dissertation could never have been written without the invaluable contributions of the East African Indians who participated in the study, giving me their time, welcoming me in their houses and offices, sharing their lives with me and providing the data I needed. Their stories, anecdotes and thoughts on life made the interviewing sessions a fascinating experience for me, teaching me about far more than linguistics, and I cannot thank them enough for their kindness and friendliness.

A number of other people contributed to this thesis in various ways. I am particularly grateful to Bronwen Evans for making the vowel formant data she collected in Ashby de la Zouch available to me. Had it not been for her generous offer, the scarcity of acoustic work on East Midlands English would have made it arduous to compare my participants' vowel production to the local variety of English. A huge thank you also goes to Nicole Studer-Joho, who shared an office with me during my time at the English

Department of Zurich University. Besides reading and commenting on large sections of the thesis, she was an extremely cooperative and supportive colleague, my co-traveller on this journey and, most importantly, a very good friend. Then, I would like to thank the following colleagues for their expert advice on various aspects of the research: Anne H. Fabricius, for her valuable feedback on vowel normalisation; Marianne Hundt, Devyani Sharma and Jane Stuart-Smith, for their thought-provoking input on the use of English in the Indian diaspora; Daniel Ezra Johnson, for his insightful suggestions on mixed-effects modelling; Stephan Schmid, for his helpful introduction to PRAAT and to the acoustic analysis of vowels; and Gerold Schneider, for his precious assistance with statistical issues and for familiarising me with the intricacies of R, the main tool used for analysis. I am also very thankful to my workmates and friends at the Zurich English Department for all the productive discussions and enjoyable moments we had over the years, which were an important source of motivation and inspiration for me.

Last, but certainly not least, I would never have been able to complete this project without the dedication and unfailing support of my parents, Brigitte and Jürg Nigsch, who welcomed me anytime and lovingly took care of my son whenever I needed it. I cannot thank them enough for their patience and the innumerable sacrifices they made for me. A very special thank you also goes to my son Ranvir, who means all the world to me.

Claudia Rathore-Nigsch

Locarno, Switzerland

January 2015



## 1. Introduction

This study is a sociophonetic investigation of dialect variation and change in a secondary diaspora situation, the East African Indian community in Leicester, UK. Leicester, the largest city in the East Midlands, is of considerable interest to the exploration of the linguistic consequences of migration and contact for at least two reasons. Firstly, it has one of the highest ethnic minority populations in Britain. According to an estimate of Leicester City Council, in 2007 the city's non-white ethnic communities accounted for 40% of the total population, and Leicester has been claimed to be 'likely to become amongst the first cities in England, outside of London, to have a majority of people with an ethnic minority background' (Roberts-Thomson 2008: 5).<sup>1</sup> Secondly, as Marett (1989: 5) points out, '[t]he single feature which makes Leicester different from other cities which experienced post-war migration is its 'East African connection' – Leicester is in fact unique among British urban centres (once again with the exception of London) in that its large South Asian population includes a substantial number of Indians who arrived in the UK via East Africa. This group of migrants from the subcontinent had settled in Kenya, Uganda and Tanzania during the colonial period. In the late 1960s and early 1970s, political pressure from the newly independent states led to a mass exodus of Indians from East Africa, and a high proportion of those who migrated to Britain resettled in Leicester, in what became known as the 'Leicester phenomenon' (Ballard 2004: 10).

### 1.1 The research field: English in the Indian diaspora

The research area in which this study is situated is the use of English in the Indian diaspora, particularly in its British component. Before considering this field and the ways in which this thesis seeks to contribute to it, an explanation of my use of the term 'Indian diaspora' is required. 'Diaspora' (from the Greek words *dia* 'through' or 'over' and *speiro* 'dispersal' or 'to sow' Lal 2006a: 14) is a complex and disputed word, which has only recently been losing its connotations of forced expulsion, exile, violence, catastrophe and

---

<sup>1</sup> Based on the 7% increase which the city's ethnic minority community showed between 1991 and 2001, it was predicted that 'Leicester may reach this milestone sometime after 2011' (Roberts-Thomson 2008: 5). The figures from the 2011 Census indicate that, if mixed ethnic groups are included, in 2011 this 'milestone' had almost been reached: Leicester's non-white ethnic minority population numbered 163,203, accounting for 49.5% of the city's population (ONS 2012, table KS201EW).

loss (see e.g. Lal 2006: 14 and Brown 2006: 3-4). In this study, I follow Brown in using the term to denote

groups of people with a common ethnicity; who have left their original homeland for prolonged periods of time and often permanently; who retain a particular sense of cultural identity and often close kinship links with other scattered members of their group, thus acknowledging their shared physical and cultural origins; and who maintain links with that homeland and a sense of its role in their present identity (Brown 2006: 4).

In other words, diasporic groups are migrant communities that are widely spread over a geographical area and are defined not only by a shared ancestral homeland but also by an awareness of these common origins, which shapes their sense of identity in their newly adopted homes.

The term 'Indian' also needs some clarification, as it has been used in different ways in the literature. As Lal (2006: 15) notes, the word generally refers to a person from the Indian subcontinent when used in pre-Partition contexts, that is, in contexts that deal with the period before 1947, when colonial rule in British India ended and the territory was divided into the modern nation states of India and Pakistan. 'Before 1947, the definition was straightforward: everyone was an Indian, whether Muslim, Hindu, Tamil or Sikh' (Lal 2006: 15). In contrast, in post-1947 contexts 'Indian' tends to have a more restricted meaning, denoting nationals of the Republic of India. In the present study, I mostly use the word in the first, more generic sense just mentioned, since a substantial number of migrants from the subcontinent moved to East Africa before Partition. Unless stated otherwise, 'Indian' thus refers to persons originating from the Indian subcontinent. The term 'Indian subcontinent' is considered equivalent to 'South Asia', which, following Kachru (1994: 497), covers the modern countries of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and the Maldives.

The Indian diaspora is one of the major migratory movements of the modern period. By the late 20<sup>th</sup> century, there were around 8.7 million people of South Asian origins living outside the Indian subcontinent (see table 1 in Clarke et al. 1990: 2). Communities of Indian migrants and their descendants are found in almost all regions of the world, including the Caribbean, the Pacific, Asia, Africa, Europe, North America and the Middle East. In some cases, they make up a substantial proportion of the total population, as in Trinidad, where they account for 40% of the country's population, and in Fiji, where they outnumber

indigenous Fijians (Brown 2006: 2). Furthermore, the Indian diaspora is characterised by great heterogeneity. As Brown (2006: 4) and others have noted, migrants from the subcontinent differed not only in terms of religious affiliation and regional-linguistic origins but also in socio-economic terms, and they left their homeland during different periods and for different purposes (see e.g. the overviews in Clarke et al. 1990; Brown 2006; Lal et al. 2006). During the colonial period, large numbers were recruited to work on plantations in colonial territories, either as indentured labourers, e.g. in Mauritius, Natal, Trinidad, and Fiji, or under similar contract systems, e.g. in Malaya and Burma. Others were traders, artisans and clerks who moved to various parts of the British Empire to work for the colonial administrations or set up their own businesses. Extensive migration from South Asia to different parts of the world also took place after the end of colonial rule. Unskilled and semi-skilled workers went to fill gaps in the labour force in Britain after the war and in the Middle East in the 1970s, and most recently, well-educated, highly skilled workers and professionals moved to Canada, the US, Australia, and New Zealand, attracted by the employment opportunities in these countries.

Finally, next to these waves of economic migrants, the 1960s and 1970s saw the second-time migration of East African Indians and other groups of political refugees who had to leave their host countries due to pressure from the indigenous populations (cf. e.g. Brown 2006: 45-50). These included Indians in Sri Lanka and Burma, who returned to South Asia, as well as Indians in Suriname (Dutch Guiana) and Fiji, who resettled in Europe, North America, New Zealand and Australia. This led to the establishment of secondary diaspora situations such as the one investigated in this study.

This brief overview indicates that, due to its size, geographical spread and diversity, the Indian diaspora offers a wide range of settings for the exploration of language and dialect contact in situations of migration. Research on English in South Asian overseas communities is, however, still comparably sparse. One variety of English in the Indian diaspora that has been investigated in detail is South African Indian English (e.g. Mesthrie 1992, 2004a, 2004b). Moreover, in recent years studies have been carried out on first-generation Indian migrants in the San Francisco Bay area, in the US (Sharma 2005a, 2005b), on the Indian community in Fiji (Zipp 2014) and on Fiji Indian twice migrants in New Zealand (Hundt 2014, in preparation). Lastly, Hundt & Sharma (2014) cover South Asian settlements in Trinidad, New Zealand, Fiji, Singapore, South Africa and the UK,

adding a comparative perspective to existing studies of individual diasporic situations. It thus appears that the field is growing.

The British strand of the Indian diaspora is of considerable interest to sociolinguistic research as well. South Asians form the largest ethnic minority community in Britain. In the 2001 Census, 2,010,541 UK residents, or 4% of the total population, identified as Indian, Pakistani or Bangladeshi (with the terms referring to the modern ethno-national categories here; Ballard 2004: 1). The 2011 Census figures for England and Wales indicate that the number of people identifying with these categories has grown considerably since then: Indians numbered 1,412,958, Pakistanis 1,124,511, and Bangladeshis 447,201, adding up to almost three million (2,984,670 or 5.3% of the total population; ONS 2012, table KS201EW). Migrants from the subcontinent settled in Britain in several waves: as mentioned above, in the years after World War II male migrants went to the UK to meet a high demand for labour (e.g. in the industries, public transport system and National Health Service); in the 1960s, they began to be joined by their spouses and families; and in the late 1960s and early 1970s, by the political refugees from East Africa (see e.g. Kalra 2006; Brown 2006: 40-45).

Crucially, the first migratory movement determined the patterns of South Asian settlement in Britain, with the overwhelming majority of migrants clustering in the country's main conurbations. To give but three examples, according to the 2011 Census Indians account for 28.3% of the local population in Leicester, Pakistanis for 20.4% of the local population in Bradford, and Bangladeshis for 32% of the local population in Tower Hamlets, London (ONS 2012, table KS201EW). High proportions of South Asians are found in most other major cities in the UK, and the British Asian diaspora has become a highly significant element of the country's urban landscape.<sup>2</sup> Lastly, it is worth noting that, as elsewhere, South Asian communities in Britain show diversity not only in terms of the three ethno-national categories mentioned above but also, for instance, in terms of religious affiliation and regional-linguistic origins. The most common religions among British Asians are the Hindu, Muslim, Sikh, and, to a lesser extent, Christian and Buddhist faiths, whereas the main Indic languages spoken in the UK are Punjabi, Sylheti, Gujarati, Hindi, Urdu and, less frequently, Tamil and Pashto (Reynolds & Verma 2007).

---

<sup>2</sup> In the present study, the word 'Asian' in compounds such as 'British Asian', 'East African Asian', 'Ugandan Asian' and 'Kenyan Asian' refers to persons from South Asia.

In spite of the diversity of British Asian communities and their large presence in urban centres, until the end of the 1990s the use of English in the British Asian diaspora attracted only limited scholarly attention (some notable exceptions being Gumperz 1982; Romaine 1995; Rampton 1995). In the past decade, however, the field has been rapidly expanding and a number of sociolinguistic studies in the UK have focused on speakers from South Asian backgrounds. A large part of this research was conducted in London (Harris 2006; Evans et al. 2007; Hirson & Sohail 2007; Fox 2007; Torgersen et al. 2006; Kerswill et al. 2008; Cheshire et al. 2011; Sharma 2011b; Sharma & Sankaran 2011; Rampton 2011; McCarthy et al. 2011) but investigations were also carried out in other British cities, including Bradford (Heselwood & McChrystal 2000), Birmingham (Khan 2006), Sheffield (Kirkham 2011) and Glasgow (Lambert et al. 2007; Stuart-Smith et al. 2011; Alam & Stuart-Smith 2011). These studies have been concerned with issues such as the retention and transmission of L1-derived features in British Asian communities, as well as their assignment to new structural and social functions; the heteroglossic speech practices of locally-born speakers from South Asian (and other ethnic) backgrounds; and the impact of British Asian and other ethnic minority groups on the local variety of (white) British English.

## **1.2 The research potential of East African Indians in Leicester**

While the field of research on English in the British Asian diaspora has been growing, the variety spoken by East African Indians in Leicester has not been described yet (the only evidence available being a few passing comments about the Indian population in East Africa in discussions of East African English; see section 1.3). As shown in later chapters, however, the East African strand of the Indian diaspora is a historically important one. Migrants from the subcontinent who settled in East Africa during the later phase of the British Empire were not only significant in numerical terms but also provided a vital contribution to the development of the infrastructure of British rule and to many sectors of the local economy. In present-day Britain, East African Indians form a distinctive component of the country's South Asian population. They have retained, among first-generation speakers at least, a strong sense of communal identity and differ from other British Asian communities in a number of ways. For example, many East African Indians have achieved considerable upward social mobility over time, especially if compared to the

Pakistani and Bangladeshi communities that have frequently been investigated in previous studies. Such differences may provide an additional perspective on whether and how patterns of dialect variation and change differ across migrants from different socioeconomic backgrounds.

Most importantly, though, East African Indians in Leicester bear considerable research potential due to their status as twice migrants. With the exception of Hundt's research on Fiji Indians in New Zealand (2014, in preparation), second-time migrations have, to the best of my knowledge, not been explicitly focused on in previous investigations of English in the Indian diaspora. However, double or secondary diaspora situations raise the interesting question of how such a complex migration pattern influences the varieties of English spoken by immigrant communities and, more specifically, how these varieties are affected by contact with the dialects, languages and cultures of three different societies – does this lead to linguistic outcomes that are different from those found in direct migrant communities?

This overarching question can be divided into two subsets of questions, which concern first-generation and second-generation twice migrants, respectively. In my use of the term, first-generation twice migrants are speakers who have grown up in the first place in which their community settled and who have undertaken the second stage of migration in adulthood. A first relevant question with regard to this group is whether they retain features derived from the languages of their original homeland. A second one is whether they identify with the host community of the country where they first settled and if so, whether this affiliation surfaces in their English. This question seems especially pertinent when considering views like the one reported below, which was expressed by one of the East African Indian participants of the present study:

I think our heart is still in- still in- in Africa. I think- I mean I would be true in saying that I would not classify myself as Indian well because- I've got Indian heritage but I am more of an African than an Indian because that's where you're born and you were brought up and your affinity is there (speaker K).

A third question is whether and how the second stage of migration has affected the variety of English spoken by first-generation twice migrants and, in other words, whether they show accommodation to the dialect of their second (current) host community.

The subset of questions about the second generation concerns twice migrants who have been raised in the second host community. A crucial question with regard to this group is whether patterns of linguistic variation found among first-generation speakers are transmitted to their offspring and whether second-generation twice migrants retain L1-derived features. If such features occur in the speech of second-generation individuals, this raises the issue of whether they are assigned new structural and social functions. An alternative outcome is that second-generation twice migrants exhibit a complete shift to the local dialect instead, a pattern that has often been claimed to be characteristic of immigrant children (see e.g. Chambers 2002). Lastly, a more general question of considerable interest regards the factors which account for the patterns of variation and change found in secondary diaspora situations.

East African Indians in Leicester hence represent an interesting case study for an investigation of the linguistic consequences of such complex migration patterns. Without forgetting that members of this community also came into contact with a number of Indic and African languages, one way of tackling this question is to look into the extent to which the patterns of linguistic variation they exhibit parallel those attested in Indian English, East African English and East Midlands English. The rationale behind this approach is that these are the varieties of English spoken in the three regions which represent the main stages of the migration history of the community: their original homeland, the Indian subcontinent; the first place in which they settled, East Africa; and their second host community, Leicester. The three dialects, which I will refer to as input varieties, are defined in the following section.

### **1.3 Indian English, East African English and East Midlands English**

Indian English and East African English both belong to the group of varieties of English commonly labelled as 'Outer Circle' varieties (Kachru 1985) or 'New Englishes' (Platt et al. 1984). These are nativised second-language varieties that typically emerged as a result of the transplantation of English to British colonies and which developed through formal transmission in the education system rather than 'natural' transmission in the home. In their present-day contexts, they usually coexist with a number of indigenous languages and are used for a wide range of intra-national (at times official) functions, e.g. as lingua franca

between different ethnic groups and in domains such as politics, the media, government administration, education, and the judiciary system.

As Wells (1982: 624) and McArthur (2003: 312) point out, the label 'Indian English' has been used in two ways in the literature (which parallel the uses of the term 'Indian' outlined earlier). In a narrower sense, it is applied to the second-language variety (or varieties) of English spoken in the modern country of India only. In a broader sense, it is used to cover the L2 varieties of English spoken on the Indian subcontinent and sometimes also those found in the Indian diaspora. A number of descriptions of Indian English phonology use the term in its narrower sense, e.g. CIEFL (1972), Bansal (1978, 1990), Wells (1982), Trudgill & Hannah (1994), Nihalani et al. (2004), and Gargesh (2004). Most of these studies focus on educated forms of the variety, variously labelled as 'General Indian English' or 'Generalised Indian English' (Bansal 1978, 1990; CIEFL 1972), 'Educated Indian English' (Nihalani et al. 2004) or simply 'Indian English' (Gargesh 2004). They also tend to take the view that, although Indian English speakers display considerable variation depending on factors such as regional-linguistic background and education level, the phonological system of Indian English is fairly uniform. For example, Gargesh (2004: 992) argues that 'Indian English (IndE)' is a cover term for a number of varieties of English used as a second language in India. These varieties exhibit significant phonological variations, stemming from regional linguistic differences. However many of these features converge into what can be considered a 'general' phonology of IndE. The notion of such a uniform system has been challenged, however, by several recent investigations of phonological variation across Indian English speakers from different first-language backgrounds (e.g. Wiltshire 2005, Wiltshire & Harnsberger 2006, Maxwell & Fletcher 2009).

Studies that adopted a broader definition of Indian English are, for instance, Wiltshire & Harnsberger (2006) and Maxwell & Fletcher (2009). According to Wiltshire & Harnsberger (2006: 91), 'Indian English (IE) is a new dialect of English with millions of speakers in the Indian subcontinent (India, Pakistan, Bangladesh, Nepal) and worldwide.' Maxwell & Fletcher (2009: 52) likewise state that



[t]raditionally, Indian English is the term loosely used to refer to English as spoken in India, Pakistan, Bangladesh, Sri Lanka, Nepal, South Africa, East Africa, the Caribbean and Britain (Wells 1982). Taking into account the increasing rate of emigration from the subcontinent, IE [Indian English] is also spoken by the Indian diaspora in different parts of the world, for example, Canada, Australia and the United States.

This sense of 'Indian English' is very similar to the label 'South Asian English', which has also been used as a cover term for the dialects of English spoken in India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka and the Maldives (see e.g. Kachru 1994: 497, Hickey 2004: 536, Gargesh 2006: 90). Once again, it has often been argued that these varieties are characterised by many similarities, particularly with regard to pronunciation. McArthur (2003: 312) observes that the broad meaning of 'Indian English' is 'a term of convenience for kinds of English that share many features.' Gargesh (2006: 102) begins his description of South Asian English phonology by referring the reader to his earlier treatment of Indian English, noting that '[t]he vowels, consonants, important phonological processes, and major prosodic features of English on the subcontinent have been discussed in Gargesh (2004a: 187-97). These are to a great degree common to SAE [South Asian English]' (see also Kachru 1994; Wells 1982). In the present study, I use the term 'Indian English' in its broader sense, applying it to the second-language varieties of English found in South Asia and, in some cases, to diasporic varieties (e.g. South African Indian English).

As with Indian English, there is also some uncertainty with regard to the area covered by the label 'East African English'. Schmied (2004: 918) observes that '[t]he geographical limits of East Africa are not always clearly defined.' Hancock & Angogo (1982) discussion of 'English in East Africa' includes Kenya, Uganda, Tanzania, Zambia, Malawi, Zimbabwe, Ethiopia, Somalia, as well as the islands of Comoros, the Seychelles and Mauritius. In contrast, most other descriptions of East African English (Trudgill & Hannah 1994; Schmied 2004, 2006; Wolf 2010) focus explicitly on the second-language variety of English spoken in the so-called 'heartland' of East Africa, namely Kenya, Uganda and Tanzania, a definition which I also adopt in this study. As Simo Bobda (2001: 269) and Schmied (2006: 189) observe, East African English is still an under-researched variety, especially with regard to phonology. However, there seems to be agreement in the existing literature that, even if East African English shares a number of pronunciation features with other L2 varieties of (Black) African English, it is distinctive and cohesive enough to be described as a dialect in its own right (Angogo & Hancock 1980; Hancock &

Angogo 1982; Abdulaziz 1991; Schmied 2004, 2006; Wolf 2010). East African English has also been claimed to be more homogeneous than West African English, a characteristic that has been attributed to several factors, including the shared colonial history of Kenya, Uganda and Tanzania and the use of Kiswahili as a lingua franca throughout the region (cf. the discussions in Abdulaziz 1991 and Wolf 2010). According to Simo Bobda (2001), though, Tanzania may be more appropriately regarded as being part of a transition zone from East African English to southern African English, since in some cases it displays variation between features that are characteristic of both varieties.

Descriptions of East African English tend to be descriptions of Black East African English, with the second-language variety of fluent, educated Black Africans being usually considered the norm (Angogo & Hancock 1980; Hancock & Angogo 1982). The English dialects of expatriates and Africa-born whites, as well as those of Black Africans who speak the language natively, tend to be regarded as relatively insignificant (Angogo & Hancock 1980; Hancock & Angogo 1982; Schmied 2004), and the varieties spoken by other ethnic communities are rarely taken into account. Two passing comments about Indians in East Africa are, however, especially relevant to the present study. Schmied (2004: 922) notes that '[t]he Asians in East Africa are usually ... multilingual, speaking not only their native languages, mainly Gujarati or Panjabi, but also their own versions of Kiswahili and English.' Hancock & Angogo (1982: 312) observe that in East Africa '[t]he largest non-English, non-African community ... consists of the Asians – especially East Indians – mainly of Gujarati origin, who maintain their languages and customs and whose English is distinctly ethnolectal.' The authors substantiate their claim by adding that

Asian speakers of East African English have a tendency to retroflex alveolar sounds ([dʒɒŋt] *don't*, ['nɔ:pʃi] *naughty*); to collapse [v] and [w] to /v/ ([va:tʃ] *what*); and sometimes to introduce a glide before initial /i/: [jɪf] *if*, ['jɪŋgələnd] *England*). Their speech also contains a higher proportion of Indian-derived lexical items, and they are characterized by their own variety of kiSwahili (Hancock & Angogo 1982: 313).

This remark is intriguing because retroflexion of /t/ and /d/ and the interchange of /v ~ w/ are typical Indian English features (see e.g. the overview in Gargesh 2004). Schmied and Hancock & Angogo's observations thus point to maintenance of Indian English patterns among Indians in East Africa, or at least to divergence from the Black African population.

In contrast to Indian English and East African English, the dialect spoken in Leicester, the current host community of the East African Indian participants of the present study, is a native variety of English. Wells (1982: 349-51) classifies the Leicester accent as 'East Midlands English', together with that of the city of Nottingham. In Hughes et al. (2005: 68-71), this label also includes Grantham, whereas Trudgill (1999: 66-9) reserves the term 'East Midlands' for Grantham and Peterborough and groups Leicester and Nottingham under 'Central Midlands'. In this study, I follow Wells (1982) and Hughes et al. (2005) in referring to the Leicester accent as 'East Midlands English'. In work on modern British English dialects and accents, the East Midlands, which are located on the border between the linguistic North and South of England, are generally categorised as a northern English dialect area (Wells 1982; Trudgill 1999; Hughes et al. 2005; but see Beal 2004, whose definition of the North does not include the Midlands). Even though East Midlands English is mentioned in these classifications, studies on this dialect are as yet surprisingly sparse. Some important exceptions are Hughes et al. (2005: 91-4), who provide a brief description of the Leicester accent, as well as Evans & Iverson's (2007) study of accent change among speakers from Ashby de la Zouch and Flynn's (2007, 2012) sociophonetic investigation of Nottingham adolescents. It is telling, however, that Schneider et al.'s (2004) *Handbook of Varieties of English*, the most comprehensive source on varieties of English around the world to date, covers the Southeast and Southwest of England, East Anglia, the West Midlands and the North of England (Beal 2004; cf. above) but lacks a contribution on the East Midlands.

#### **1.4 Aims and organisation of the present study**

This thesis has two major goals. My first aim, a descriptive one, is to add to the existing knowledge about English in the Indian diaspora by providing a description of an Indian diasporic context that has not been investigated yet. My second aim, of a more theoretical nature, is to look at the case study of East African Indians in Leicester to address the questions outlined in section 1.2 above and to explore the potential of double diaspora situations to improve our understanding of the interrelations between migration and contact, on the one hand, and dialect variation and change, on the other. To this end, I seek to assess the relative influence of the three input varieties on the dialect spoken by East African Indians in Leicester, looking into whether the tendency towards divergence and feature

maintenance reported by Schmied (2004) and Hancock & Angogo (1982) for Indians in East Africa is also found among East African Indians in Leicester. My aims translate into two main research questions, which focus on first- and second-generation speakers, respectively, and are stated in 1) and 2) below:

- 1) Do the patterns of linguistic variation displayed by first-generation East African Indians in Leicester show any parallels to Indian English, East African English, or East Midlands English?
- 2) Do patterns of linguistic variation among East African Indians in Leicester change from the first generation to the second generation and if so, how?

In order to answer these questions, I examine the production of one consonantal variable, postvocalic /r/, and of three vocalic variables, FOOT, STRUT and NURSE (Wells 1982), by a group of first- and second-generation informants from the East African Indian community in Leicester. The analysis is based on conversational data from sociolinguistic interviews that I carried out in the city in 2007 and 2009.

The rest of this thesis is structured as follows. Chapter 2 provides the theoretical background of the study. I take a closer look at previous work on English in the British Asian diaspora and briefly consider sociolinguistic investigations of Indian diasporic communities in other countries, discussing the major questions this research has been concerned with, as well as important findings that have emerged from it. Chapter 3 describes the socio-historical background of the East African Indian community in Leicester. It starts with a sketch of the city's large and distinctive ethnic minority population and then traces the history of its 'East African connection', from the early days of Indian migration to East Africa to the large-scale exodus from the region that took place after independence, and the resettlement of East African Indians in Leicester. The chapter covers a number of issues that are relevant to sociolinguistic enquiry, such as the regional origins and socio-economic characteristics of the migrants, as well as the community's linguistic and religious composition.

Chapter 4 introduces the linguistic variables analysed in this study and shows why they have been chosen for investigation. I provide a definition of postvocalic /r/ and the

FOOT, STRUT and NURSE vowels, complemented by information about their historical development and present-day variability. This is followed by a discussion of postvocalic /r/ and the three vowels in Indian English, East African English, and East Midlands English. In chapter 5, I describe the research method of the present study, including the fieldwork procedure, the speaker sample selected for analysis, and the way in which I carried out the auditory analysis of postvocalic /r/ and the acoustic analysis of the vowels. Since in chapter 7 I evaluate the performance of different vowel normalisation procedures, I also provide a discussion of vowel normalisation, and conclude the chapter with an introduction to mixed-effects modelling, the statistical method employed for assessing the significance of the results.

In chapters 6 and 7, I present and discuss the results of the quantitative analysis. For postvocalic /r/, I examine the overall frequency of occurrence and phonetic realisation of rhotic tokens, and for the vowels, I look into vowel quality and duration. The main focus is on group-level differences between the generations, but in chapter 6 I also investigate variation in the use of coda /r/ within the first generation. Chapter 8 first summarises the results and then expands the discussion by comparing them to previous findings on English in the Indian diaspora in Britain and elsewhere. Whereas chapters 6 and 7 present internal (linguistic) evidence, in this chapter I consider external (extra-linguistic) evidence, examining how socio-historical factors may explain parallels and differences in linguistic behaviour between East African Indians in Leicester and other Indian diasporic communities. Finally, chapter 9 returns to the question of the potential of East African Indians for sociolinguistic research and considers directions for future research.

## **2. English in the Indian diaspora**

### **2.0 Introduction**

This chapter looks into the studies of English in the Indian diaspora mentioned in section 1.1. The main focus is on investigations of South Asian communities in Britain (section 2.1), but I also provide a brief sketch of work on Indian diasporic communities in other countries, including South Africa and the United States (section 2.2). My aim is to provide an overview of the issues and questions which have constituted major concerns in the field, as well as a summary of the main findings that have emerged from this body of research. The patterns of variation and change variation found among East African Indians in Leicester are examined in the light of these findings in chapter 8.

### **2.1 English in the Indian diaspora: Britain**

As noted in section 1.1, until about a decade ago comparably little research was conducted on English in the British Asian diaspora. There are, however, a few important exceptions in this regard. One is the work carried out by Gumperz in the 1970s, which examined problems of crosscultural communication between South Asian and white British English speakers caused by differences in discourse strategies (Gumperz 1982). In the 1980s and 1990s, this was followed by Romaine's investigation of British Punjabi-English code-switching (Romaine 1995) and, a little later, by Rampton's (1995) influential crossing study (see section 2.1.1 below). The 2000s saw a growing interest in the British Asian diaspora, with sociolinguistic studies being conducted on all three main ethno-national groups (Indians, Pakistanis, Bangladeshis). Three major trends are recognisable in this work: one line of research has concentrated on stylisation and crossing practices among adolescents from South Asian and other ethnic backgrounds; other studies have examined the structural properties of particular varieties of British Asian English, focussing on changes across generations and/or variation among locally-born migrants; and others still have included speakers from South Asian communities in broader explorations of the impact of ethnic minority groups on current changes in British English. The three lines of research are discussed in turn.

### 2.1.1 Crossing and stylisation phenomena

According to Rampton (2011: 290), crossing and stylisation are self-conscious, reflexive speech practices that have traditionally been assigned to pragmatics and interactional sociolinguistics rather than dialectology and variationist sociolinguistics (but cf. Rampton 2011: 288-92 for a criticism of variationists' disregard for this type of language use). 'Crossing' refers to 'the use of language varieties associated with social or ethnic groups that the speaker does not normally belong to' (Rampton 1995: 14-15), whereas 'stylisation' is defined as a type of performance in which the speaker produces 'an artistic image of another's language' (Bakhtin 1981: 362, in Rampton 2006: 27).

Rampton (1995; see also Rampton 2011) is a groundbreaking study within the crossing and stylisation framework. In the 1980s, the author conducted fieldwork in an ethnically mixed working-class neighbourhood of a South Midlands town referred to as Ashmead. He investigated heteroglossic speech practices among (mostly) UK-born adolescents of Indian, Pakistani, Bangladeshi, Afro-Caribbean and white British descent, looking at the use of Creole by Anglos and South Asians, the use of Punjabi by non-South Asians, and the use of stylised Asian English (SAE) by all groups. His work revealed that the three varieties had distinct symbolic associations for Ashmead adolescents, which led to differences in their use. Since Punjabi-accented English was accepted in parents but stigmatised in peers, stylised Asian English indexed distance from adolescent life:

Asian English stood for a past that adolescents felt they were now leaving behind. This was seen as a language of transition, associated with adult migrants and new arrivals who were seen as having adapted only imperfectly to the vernaculars dominant in the new country. Many informants felt some loyalty towards varieties of Asian English, but in striking contrast to both Creole and Panjabi, they were not associated with any prestigious youth creativity capable of attracting new adherents (Rampton 1995: 57).

For this reason, stylised Asian English was often used as 'a voice not being claimed as part of the speaker's own identity (...) [evoking] excessive deference and insufficient demeanour' (Rampton 1995: 219-20). In contrast, Creole was the variety most closely connected with vitality and the concerns of youth culture; it tended to signal 'abundant demeanour and limited reference' (Rampton 1995: 220) and was commonly employed to stress positive, authentic evaluations. Crossing into both SAE and Creole was generally

avoided in the presence of peers of Punjabi and Afro-Caribbean origins. Crossing into Punjabi, on the other hand, crucially depended on interaction with South Asian adolescents: within predominantly playful antagonism, cross-over Panjabi made provocative claims to an identity that speakers *wanted* their interlocutors to contest (Rampton 1995: 220). The author argues that, although SAE, Creole and Punjabi had different symbolic associations, the crossing and stylisation practices developed by Ashmead adolescents served to signal inter-ethnic solidarity and affiliation with their working-class status within British society (Rampton 2011: 278).

A similarly rich polyphony was identified by Harris (2006: 3) among West London youngsters in the late 1990s. Harris undertook a study of the self-representation of everyday patterns of language use by a group of locally-born South Asian adolescents, referred to as Blackhill youth. His main finding was that many young British-born South Asians, while retaining both diasporic and local links with a variety of traditions derived from the Indian subcontinent, are nevertheless fundamentally shaped by an everyday low-key Britishness, albeit a Britishness with new inflections (Harris 2006: 1). An important way in which this Britishness manifested itself was in the Londonness of the adolescents' speech, indexed by the extensive use of non-standard local features such as /t/-glottaling (the realisation of /t/ as [ʔ]), TH-fronting (the use of [f] and [v] for /θ/ and /ð/), *I done it* for *I did it*, non-standard *was*, and the invariant *innit* tag. These London traits were, however, closely intertwined with a range of other identity markers linked to two main cultural influences, the traditional and the emergent contemporary (Harris 2006: 11, 86-8, drawing on Williams 1977). The first category comprised, for instance, the use of terms derived from Punjabi, Gujarati and other Indic languages, such as *cousin-brother* 'male cousin'. The second category included both features expressing global teenage affiliation, e.g. the quotative BE LIKE and Up-speak (the use of rising intonation with statements) and features signalling affiliation with Black Caribbean, Black London and African American culture, e.g. the use of [d] for [ð] and of Jamaican English *seen* 'as an affirmation of mutual understanding or being on the same wavelength as an interlocutor' (Harris 2006: 190). These heteroglossic speech practices led Harris (2006: 1-2, 166-7) to argue that for the Blackhill youth, emergent elements did not replace traditional ones; instead, old and new were always simultaneously present in a new, hybrid type of ethnic identity he described as *Brasian*.



Finally, in a more recent study carried out as part of a larger investigation of dialect variation and change within the London Punjabi community (*Dialect Development and Style in a Diasporic Community*; cf. section 2.1.2 below), Rampton (2011) showed that crossing and stylised speech were still found among (at least some) second-generation adult South Asians. For example, a businessman in his early forties used these practices to counsel a childhood friend on a personal problem. Rampton (2011: 288) thus concluded that

in addition to being active in urban locations in Britain for at least 25630 years, it looks as though this style of speaking endures across the life-span. The acts and activities in which it is articulated may change as people get older, but crossing isn't incompatible with the process of maturation ..., and a dense vernacular mix of Creole, Cockney and Punjabi forms can still be a valued and quite flexible resource in the repertoire of successful middle-aged professionals.

Although crossing and stylisation phenomena have predominantly been associated with youth language, Rampton's study thus suggests that these practices are not necessarily restricted to adolescence.

### **2.1.2 Variation and change in British Asian Englishes**

Research on British Asian Englishes and on the influence of British Asian and other ethnic minority groups on the dialect spoken by the surrounding community is essentially concerned with language variation and change. As Sharma & Sankaran (2011: 424) point out, work in these areas is of general theoretical relevance because immigrant communities link the two basic mechanisms of language (and dialect) change identified by Labov (2007: 345 ff.): 'transmission with incrementation' and 'diffusion'. Transmission refers to community-internal change resulting from the 'unbroken sequence of native-language acquisition by children' and in which, through the process of incrementation, 'successive cohorts and generations of children advance the change beyond the level of their caretakers and role models, and in the same direction over many generations' (Labov 2007: 346). Cheshire et al. (2011: 154) explain this process as follows: while children initially acquire the variety spoken by their caregivers, social pressure subsequently leads them to focus on a new norm and to adopt new linguistic features. Their use of these new forms increases progressively until it reaches a peak in adolescence (often around the age of 17), after

which it levels off. Crucially, children have 'the ability ... to replicate faithfully the form of the older generation's language, in all of its structural detail' (Labov 2007: 346). As a consequence, in situations of transmission structural constraints tend to be maintained by subsequent generations.

The second type of mechanism, diffusion, refers to the spread of changes across communities and, in other words, to contact-induced change. According to Labov (2007: 349), this process radically differs from transmission because it involves a different type of language acquisition:

[o]n the one hand, transmission is the product of the acquisition of language by young children. On the other hand, the limitations on diffusion are the result of the fact that most language contact is largely between and among adults. It follows that structural patterns are not as likely to be diffused because adults do not learn and reproduce linguistic forms, rules, and constraints with the accuracy and speed that children display.

The limited learning ability of adults often leads to a 'weakening of the original pattern and a loss of structural features' (Labov 2007: 344). In situations of diffusion across communities, one thus commonly finds structural simplification.

Taking up Sharma & Sankaran's (2011: 424) point again, British Asian and other immigrant communities represent a rather complex situation in terms of the transmission-diffusion dichotomy, since this is a case where the 'unbroken sequence of native-language acquisition by children' is interrupted, and one finds both second language acquisition (by first-generation migrants) and first language acquisition (by second-generation migrants) within the same community. Cheshire et al. (2011: 156) also draw attention to this when discussing urban multi-ethnolects: 'given that, in a high contact community, transmission between generations may involve a stage of language shift, how do features first form and then develop?' Research focussing on the English spoken in British Asian communities has looked into a number of questions related to this complexity, including whether the speech of first-generation migrants shows any influence from their first language, whether and to what extent L1-derived traits are retained by locally-born generations, and whether reallocation takes place for such features. This refers to a common process of new dialect formation 'where two or more variants in the dialect mix survive the levelling process but are refunctionalised, evolving new social or linguistic functions in the new dialect' (Britain & Trudgill 1999: 245; see also the discussions in Schreier 2008: 24-25 and Schneider 2007:

106-7). A related question that has been examined is whether, how and why the use of these features varies among second-generation speakers.

While the occurrence of L1-influenced features in the speech of first-generation migrants appears to be uncontroversial, there has been considerable debate about the question of their transmission to subsequent generations (cf. Sharma & Sankaran 2011 for a review of the main positions). As Sharma & Sankaran (2011: 401) note, a commonly held view in research on dialect acquisition is that children do not adopt the linguistic forms used by their parents, acquiring those of their peers instead. In immigrant situations where parents do not speak English as a native language, children are also widely believed to acquire the native accent of their peers rather than the foreign accent of their parents, a process which Chambers (2002) refers to as the 'Ethan experience' (after the name of a child of eastern European origins who was born and raised in Toronto and never adopted the L1-accented traits of his parents' speech). According to Chambers (2002: 122), the Ethan experience can be accounted for by postulating the existence of an innate foreign accent filter in the child's sociolinguistic competence which 'appears to function as a subconscious guide to phonological acquisition (and perhaps more than phonology), smoothing the process by screening out non-native elements.' This line of thought holds, in other words, that the process of dialect acquisition is determined by cognitive factors.

Two important issues have, however, been raised in work on the British Asian diaspora with regard to this hypothesis. The first one has already been touched upon above, and concerns situations in which the immigrant population clearly outnumbers the local (white) population. As Fox (2007: 272-3) remarks,

[t]he assumption underlying [Chambers's] principle ... is that the offspring of immigrants are surrounded by native-born classmates and that they acquire the indigenous accent of their peers. What happens, though, when the offspring are not surrounded by peers who speak the indigenous accent but are instead surrounded by peers who come from similar backgrounds as themselves ...?

In such settings, access to the local native variety of English may be highly restricted for immigrant children. Within Asian communities in modern British urban centres, conditions of acquisition of this kind are not uncommon and may contribute to the retention of L1 features among locally-born generations.

The other concern raised about the innate accent filter hypothesis is that it is not clear whether a model with such a strongly cognitive orientation is needed at all: [t]he central uncertainty in evaluating Chambers's hypothesis is whether an innate mechanism is necessary, or whether the social forces typically active in monolingual dialect acquisition are in fact sufficient to explain these cases as well (Sharma & Sankaran 2011: 401). Sharma & Sankaran (2011: 403) discuss three basic hypotheses on the acquisition of the local dialect and loss of L1 features in diasporic communities, which they summarise as follows:

Hypothesis I (cognitive, strong version):

Native English-speaking children do not retain parents' non-native traits.

Hypothesis II (cognitive, weak version):

Native English-speaking children may retain parents' non-native traits but will reallocate them to new linguistic or social functions.

Hypothesis III (social):

Whether native English-speaking children reallocate parents' non-native traits depends on social factors, not nativeness.

Two studies which reported non-retention of L1-derived features by locally-born migrants are Evans et al. (2007) and McCarthy et al. (2011). The former is an investigation of variation in vowel production across first- and second-generation Gujarati migrants in Wembley, north London. The authors carried out an acoustic analysis of the British English monophthongal vowels which showed that, while the vowel space of first-generation subjects resembled that of their mother tongue, this system had not been acquired by the second generation. Few gender differences were found within the latter group, and a comparison with data from age-matched speakers of Standard Southern British English (SSBE) revealed that the second generation's vowel categories resembled those of SSBE (see also section 4.2.4.1). Rather than opting for a cognitive explanation like the innate accent filter, however, Evans et al. (2007: 1744) suggest that the second generation's affiliation with the local prestige variety may be related to the Gujarati community's social mobility (cf. the discussion in section 8.2.2).

A similar pattern was reported by McCarthy et al. (2011) for speakers from the Bangladeshi community in London. The authors examined the use of different phonetic

variants of /l/, /r/ and the British English monophthongs across three groups of adult migrants from a Sylheti L1 background: late first-generation subjects, who had migrated to the UK after the age of 25; early first-generation subjects, who had arrived before the age of 10; and second-generation subjects, who had been born and raised in Britain. Overall, late first-generation speakers tended to use variants that resembled those of their first language, including a number of different phonetic realisations of /r/, as well as peripheralised central vowels and a lack of length distinctions for the monophthongs. McCarthy et al. (2011: 1357) therefore concluded that this group use their Sylheti categories when speaking English. In contrast, both early first-generation and second-generation speakers produced variants that were similar to those typical of SSBE (see also sections 4.1.3.1.2 and 4.2.4.1). Early first-generation and second-generation subjects differed, however, in that only the latter used SSBE-like dark-vocalised variants of /l/ in word-final position.

While the British-born groups of Evans et al. (2007) and McCarthy et al. (2011) both showed parallels to SSBE, retention and reallocation of L1 traits among second-generation speakers are attested in the vast majority of studies on the British Asian diaspora, both in the capital and elsewhere. Hirson & Sohail's (2007) investigation of the use of English /r/ among locally-born Punjabi-English bilinguals in London (discussed in more detail in section 4.1.3.1.2) demonstrated that subjects who self-identified as Asian tended to display Punjabi-influenced patterns of /r/-pronunciation, whereas those who regarded themselves as British Asian showed greater affiliation with southeastern British English. Heselwood & McChrystal (2000) looked at the occurrence of L1 accent traits in the speech of ten-year-old Punjabi-English bilinguals in Bradford. Their study revealed not only that a number of Punjabi-derived features were used by the children but also that some of them showed gender-related variation, while others did not. More specifically, no gender difference was found for clear allophones of coda /l/, fronted epenthetic vowels and prevoiced stops; in contrast, retracted variants of alveolar stops and backed open vowels occurred more frequently among boys, whose pronunciation was also rated as having stronger non-English influences than that of girls.

As for the question of reallocation, Heselwood & McChrystal (2000: 65-6) offered two possible explanations for the gender difference they reported for retracted stops (and open vowel backing, which they considered a coarticulatory effect of retroflexion). Since it had been suggested that among Punjabi monolinguals, male speakers may tend towards a stronger degree of retroflexion than female speakers, the authors speculated that the gender-

related variation exhibited by the children may have resulted from their carrying this L1 pattern into English. They also argued, however, that retracted and non-retracted stops may have indexed affiliation with the local Punjabi and wider Bradford communities, respectively. Thus, it is unclear whether this L1-derived trait still carried the same social meaning as in the heritage language or whether it had been assigned a new social function. With regard to the voicing of voiced stops, on the other hand, the study demonstrated that, while prevoicing is nearly categorical in Punjabi and absent from British English, the children displayed a high degree of variability in the use of this feature in both languages. Heselwood & McChrystal (2000: 64) observed that “[i]n effect what they have done is add together the allophones of English voiced stops and the allophones of Punjabi voiced stops to a pattern which may be indicative of the reallocation of this feature to new functions.

The use of retracted variants of alveolar stops is attested in a number of other studies of the speech of locally-born British Asians. Kirkham (2011) investigated differences in the realisation of /t/ and /d/ between second-generation Pakistani and white British adolescents in Sheffield. A fine-grained acoustic analysis of voice onset time, closure voicing (for /d/ only), relative burst intensity and spectral moments revealed that, compared to its white British counterpart, British Asian /t/ is characterized by a shorter and louder burst with a more retracted place of articulation (Kirkham 2011: 1105). The realisation of /d/, on the other hand, did not differ significantly across the two groups. Importantly, Kirkham (2011: 1105) points out that the occurrence of retracted /t/ in the speech of British-born Asians cannot be accounted for by influence from the heritage language Punjabi alone, since among his Pakistani informants higher proficiency levels in Punjabi did not necessarily correspond to a greater use of L1-derived features. Instead, he suggests that retracted /t/ had been assigned a new social function by the locally-born generation:

[t]he more retracted realization of /t/ may be well established in the British Asian children's repertoire due to the Punjabi and Asian English input from their parents. However, as social divisions begin to emerge and ethnic identity becomes more important in the children's peer networks, differences in /t/ realization also begin to emerge more sharply, with speakers' use of the retracted variant marking British Asian identity (Kirkham 2011: 1105).

Lambert et al. (2007), Stuart-Smith et al. (2011) and Alam & Stuart-Smith (2011) reported retention and reallocation of retracted /t/ and other L1-influenced accent features

among second-generation speakers from the Glasgow Asian community. Their findings stem from two projects, a study based on word-list and reading passage data from six locally-born Glasgow Asians and four white Glaswegians, and an ethnographic study of the relationship between phonetic variation and identity construction among Glasgow Pakistani high school girls. Lambert et al. (2007) found that, unlike white Glaswegians, the Asian subjects from the first study tended to use retracted variants of /l/ and, occasionally at least, to display prenasalisation of word-initial /b/; they also commonly produced word-final /t/ with an ejective-like quality, while avoiding the use of glottal stops in this position. Moreover, an analysis of spontaneous speech data from the Pakistani high school girls revealed frequent occurrence of retracted variants of word-initial /t/ and /d/. Variation in the realisation of the two stops was related, on the one hand, to topic, with alveolar variants appearing more often in conversations about school, and, on the other hand, to the girls' social practices, with more westernised girls disavouring retracted realisations the most. Like Kirkham (2011), Lambert et al. (2007: 1512) thus concluded that 'certain features originally derived from language interference are now being actively deployed as English accent features by second and later generation speakers, though with rather different realizations and distributions from those expected in the original language.' They also argued that, crucially, 'Glasgow Asian consists of an array of features indexical of both Glaswegian and Asian identity.'

Follow-up investigations confirmed these findings. Using the datasets of the studies mentioned above, Stuart-Smith et al. (2011) carried out an acoustic analysis of Glasgow Asians' production of the FACE and GOAT vowels and of syllable-initial /l/, which were expected to be closer and clearer than in Glasgow English, respectively. As predicted, the Asian male speakers from the first study generally displayed higher and more fronted qualities for FACE and GOAT than white Glaswegian males. In the second study, the realisation of the two vowels showed some correlation (more so for GOAT than for FACE) with the communities of practice the Pakistani high school girls were involved in. Moreover, Asian subjects from the first study exhibited clearer realisations of syllable-initial /l/ than white speakers, with darker variants found among those informants who reported to have fewer Asian friends. In the second study, more westernised high school girls tended, on average, to use darker realisations of /l/; interestingly, though, the clearest and darkest variants were produced by the two most conservative girls, who both strongly affiliated with traditional Pakistani cultural values but had very different attitudes to issues

such as further education and work. Taking the argument in Lambert et al. (2007) one step further, Stuart-Smith et al. (2011: 52-5) proposed the term ‘Glaswegian’ (following Harris 2006) to refer to the hybridity characteristic of the Glasgow Asian girls’ cultural, social and linguistic practices, and demonstrated that this hybridity was also reflected at a fine phonetic level, with Glasgow Asian syllable-initial /l/ displaying, for instance, a combination of acoustic properties typical of Asian clear /l/ and Glaswegian dark /l/.

Finally, Alam & Stuart-Smith (2011) acoustic analysis of syllable-initial /t/ lent further support to the hypothesis that phonetic variation was closely related to the Pakistani high school girls’ social practices. As in Lambert et al. (2007), auditory inspection indicated that the different variants of /t/ used by the girls were ranked along an articulatory continuum which corresponded to membership in different communities of practice: while the more conservative girls favoured apico-postalveolar articulations, the more rebellious girls, who were more westernised and engaged in practices which were unacceptable to the community (e.g. drinking and smoking), preferred laminal-dental articulations. A spectral moment analysis examining the distribution of spectral energy of the stop bursts showed that, out of four measures, three correlated with the girls’ community of practice membership and, in particular, that the more rebellious girls displayed lower Mean values than the more conservative girls (cf. Alam & Stuart-Smith 2011: 217-8 for more details on the measures and results). This finding is noteworthy because lower and higher Mean values were also found to distinguish non-Asian and Asian Glasgow males, who tended to produce laminal-dental and retracted stops, respectively (Stuart-Smith 2009; in Alam & Stuart-Smith 2011: 218-9). The systematic relation between the use of /t/ and social practices among Pakistani high school girls led Alam & Stuart-Smith (2011: 219) to conclude that ‘fine phonetic variation which indexes ethnicity is in fact indexical of local ethnic identity’.

Sharma (2011b: 487) and Sharma & Sankaran (2011: 404) draw attention to one aspect common to the majority of studies on the English of locally-born British Asians, namely that the focus tends to be on younger second-generation speakers, usually in their teens or twenties. A much wider age range of UK-born informants was included, however, in the project *Dialect Development and Style in a Diasporic Community*, mentioned in section 2.1.1.<sup>1</sup> This research project combined approaches from quantitative variationist and

---

<sup>1</sup> Principal investigator: Devyani Sharma; co-investigators: Ben Rampton, Roxy Harris; researchers: Lavanya Sankaran and Pam Knight (Sharma 2011a).



interactional sociolinguistics to explore cross-generational dialect variation and change within the Punjabi community in Southall. Its output revealed an intricate picture of linguistic differences within the second generation, related to the socio-historical circumstances in which different age groups grew up.

Sharma & Sankaran (2011) analysed sociolinguistic interview data from over 40 participants in order to determine to what extent and how fast L1 features were lost and local features were acquired by locally-born migrants, evaluating the relative influence of cognitive and social factors on these processes (see above). To this end, the authors examined the use of retracted/retroflex /t/<sup>2</sup> and /t/-glottaling (a Punjabi and a local British English feature, respectively) across three groups of informants: first-generation speakers, older second-generation speakers (> 35 years), and younger second-generation speakers (≤ 35 years). The results for retroflexion indicated that, even though the overall frequency of retracted /t/ progressively decreased across the three groups, this feature was still used by both older and younger second-generation speakers. The two British-born groups differed, however, in that older gen2 participants followed the same structural constraints as the first generation, while younger gen2 participants exhibited a different type of phonetic conditioning. Social factors, gender in particular, distinguished younger locally-born speakers as well: whereas first-generation and older second-generation informants displayed no marked gender differences for retracted /t/ in the sociolinguistic interview data, younger gen2 men made considerably greater use of this feature than younger gen2 women (but cf. the discussion of Sharma 2011b below for other contexts). According to Sharma & Sankaran (2011: 420), this indicated that retracted /t/ was assigned new structural and social functions among UK-born speakers in Southall but that, crucially, reallocation took place with a delay of one generation. Glottal stops, on the other hand, sharply distinguished both second-generation groups from the first generation: while /t/-glottaling was rare among the latter, it was commonly used by the locally-born generations, with both groups adhering to the constraint hierarchy attested for this feature in British English. As Sharma & Sankaran (2011: 420) remarked, this finding is significant because it shows that the acquisition of local and foreign dialect systems can be quite independent.

---

<sup>2</sup> In Sharma & Sankaran (2011) (as well as Sharma 2011b), the term 'retroflexion' is used in a broad sense, which includes all variants within the range of postalveolar retraction beyond British alveolar /t/ (Sharma & Sankaran 2011: 409).

The divergences in the use of /t/-retroflexion and /t/-glottaling between the two British-born groups were, in fact, a reflection of radically different linguistic behaviour. Sharma & Sankaran (2011: 421) reported that the older second generation's parallel adherence to the first generation's constraints for retracted /t/ and to British English constraints for glottal stops derived from a native-like command of both systems: this group had acquired both Indian English and the local British English variety, changing neither greatly, and frequently exhibited 'chameleonic' shifts from one system to the other. Younger second-generation subjects, on the other hand, showed a more hybrid system without sharp shifts: these individuals parallel British English grammatical detail much more closely than Indian English. Only a few Punjabi traits are scattered sparsely – though very saliently – in otherwise British-sounding English (Sharma & Sankaran 2011: 421-2). Sharma & Sankaran (2011: 422-4) argued that these general differences, and the delay in the reallocation of retracted /t/ in particular, were related to the different socio-historical circumstances experienced by the two groups. Older British-born speakers were raised during a period in which the Southall Asian community was still a minority and British-Asian relations were characterised by racial tensions. These conditions created both a need to pass as British and a need to maintain close relations with India: 'for this group ... very strong and very distinct incentives existed for signaling authentic membership in both British and Indian groups, in different settings – a goal which could be achieved through a native-like use of both local British English and Indian English (Sharma & Sankaran 2011: 423). In contrast, as younger second-generation participants grew up the South Asian community in Southall had become numerically predominant, racial tensions had lessened and direct ties to India had become weaker for this group. According to Sharma & Sankaran (2011: 423-4), 'for them, their primary affiliation is their local British Asian peer group, and a focused, Punjabi-inflected British English speech style suits this target well.' The authors therefore concluded that social rather than cognitive factors were the primary source of influence on dialect variation and change among their speakers (Sharma & Sankaran 2011: 424).

Sharma & Sankaran's (2011) finding that younger but not older second-generation speakers exhibited a marked gender contrast in the use of /t/-retroflexion in the interview data was confirmed by a similar variationist analysis in Sharma (2011b), which indicated that in the interview style, retracted /t/ occurred with more or less equal frequency across older and younger gen2 male subjects, whereas it seemed to have almost vanished in the

speech of younger gen2 women. However, in the same paper Sharma also undertook a repertoire analysis which showed that for the locally-born generations, age and gender interacted in complex ways. Using self-recordings from four speakers, an older and a younger man, and an older and a younger woman (supported by data from four parallel individuals), the author investigated the use of retracted /t/, monophthongal realisations of FACE and GOAT, as well as clear variants of coda /l/ across a range of different contexts. She found that younger women did in fact make use of retracted /t/, but that the occurrence of this feature was restricted to personal contexts, e.g. the home.

More generally, the study provided further empirical evidence for the existence of the two types of repertoire mentioned above, showing that some second-generation speakers exhibited context- and addressee-related shifting between a number of distinct English varieties (Indian, mixed, vernacular and/or Standard British), whereas others tended to use a single hybrid variety. An interesting gender reversal emerged in this regard across the two groups: it is older *men* and younger *women* who use a highly differentiated repertoire, and older *women* and younger *men* who have a more fused and invariant repertoire (Sharma 2011b: 479). This reversal in repertoire types correlated with a reversal of gender differences in network diversity (as measured by a new Network Diversity Index; cf. Sharma 2011b: 471-2). While all informants had prevalently Asian networks, the older man and the younger woman differed from the older woman and the younger man in that they reported frequent interaction with a much wider range of subgroups within their networks. According to Sharma (2011b: 482-6), this pattern can once again be traced to the different socio-historical circumstances in which the two British-born groups grew up, with the female-male differences in network diversity reflecting traditional Punjabi gender roles for older speakers and Western urban working- and lower middle-class gender roles for younger speakers, respectively. The gender reversal in repertoire types was, in other words, symptomatic of a broader social transformation within the Southall community, demonstrating that, when continually replenished through ongoing migration, the second generation can be internally heterogeneous, encompassing several stages of social and linguistic change (Sharma 2011b: 487).

### 2.1.3 The impact of British Asians on local British English dialects

I now turn to the third type of work on the British Asian diaspora that I mentioned at the beginning of section 2.1, which looked at the speech of locally-born migrants in the context of larger investigations of inter-ethnic variation in present-day British English and of the role of ethnic minority groups in language change. Khan (2006) is a sociolinguistic study on inter-ethnic variation in Birmingham English. The author examined the use of five linguistic variables, /θ/ and /ð/, the GOAT and PRICE vowels, as well as past tense BE, by locally-born adolescents of white British, Pakistani and Black Caribbean descent, comparing their production of these features to that of older white Birmingham informants. The aims of the study were to describe ethnic minority Englishes in the city and to look at changes in Birmingham English within the larger context of dialect levelling in present-day Britain. This is a widespread process involving the reduction in the number of realisations of linguistic units found in a defined area, usually through the loss of geographically and demographically restricted, or 'marked' variants (Torgersen & Kerswill 2004: 24). Furthermore, Khan also explored the social factors governing variation and change in Birmingham English and, more specifically, the role of social networks, speakers' attitudes to the local community and ethnic orientation.

The results for /θ/ and /ð/ indicated that, as a consequence of geographical diffusion, the use of the innovative southern variants [f] and [v] (TH-fronting) had become an established feature of the adolescents' speech. At the same time, TH-stopping, a characteristic of both Caribbean and Indian English, also commonly occurred among young speakers, with /θ/ and /ð/ being realised as the dental stops [t̪] and [d̪]. While the white British and Caribbean groups favoured [f] and [v], the Pakistani informants preferred [t̪] and [d̪]. The analysis of GOAT showed that the traditional Birmingham realisation [ʌʊ] was giving way to the non-localised variant [əʊ] and to a monophthongal quality [o:], found in both Caribbean and Indian English. GOAT fronting, the use of the innovative southern variant [əʏ], was quite rare among the adolescents and appeared to be particularly preferred by female speakers. Like /θ/ and /ð/, the GOAT variants were not distributed equally across ethnic groups: white British adolescents realised this vowel most often as [əʊ], Caribbean subjects made similar uses of [əʊ], [o:] and a further ethnic variant [ɔʊ], and Pakistani informants clearly favoured [o:]. As for the PRICE vowel, [aɪ] and [ɔɪ] (the best established and most distinctive sound in the Birmingham accent; Khan 2006: 139) were commonly

found among older Birmingham English speakers. Young informants still made quite frequent use of [aɪ] but tended towards non-localised variants with a more fronted onset, around [äɪ ~ aɪ]. [äɪ] and [aɪ] were the qualities preferred by the Caribbean and Pakistani groups; a relatively infrequent variant with an even more front onset, [aɪ] (characteristic of Caribbean English), appeared to be restricted to the former group. White British adolescents often produced [äɪ] and [aɪ] too but tended to favour [aɪ]; they also made limited use of [ɔɪ]. Finally, the results for past tense BE showed that, on the whole, adolescents were converging towards the non-standard levelled *was/weren* pattern, exhibiting less variation in the use of this variable than older Birmingham English speakers. However, there were also clear inter-ethnic differences: for example, white British adolescents made greatest use of non-standard non-existential *was*, whereas the Pakistani group used non-standard existential *was* more frequently and non-standard 1<sup>st</sup> pers. sing. *weren* was more common among Caribbean participants.

With regard to social factors, Khan's (2006) study demonstrated that speakers' attitudes towards Birmingham generally had little influence on their linguistic behaviour. Among white British adolescents, the use of linguistic variables strongly correlated with individuals' social networks, whereas within the Caribbean and Pakistani groups, linguistic variation was mainly affected by informants' ethnic orientation. The author observes that, while white British participants use ethnic variants to index social closeness to Pakistani and Caribbean peers,

[t]he Pakistani informants use the [f] and [v] variants to mark orientation towards a *British* identity and the ethnic vocalic variants to mark orientation towards a *Pakistani/Asian* identity. The Caribbean informants use the Birmingham variants to mark orientation towards an *English* identity and the ethnic vocalic variants to mark orientation towards a *Black Caribbean/Jamaican* identity (Khan 2006: 283).

These findings provide clear evidence for the retention and reallocation of L1-derived features among British ethnic minority groups, including the Pakistani community. Crucially, though, they also show that the use of ethnic variants can become an important source of innovation and change beyond the community in which they originate. According to Khan (2006: 298), several of the changes found among his young speakers arose through inter-ethnic contact within the city itself: ð[i]t is possible that the vocalic changes evident among the English adolescents are the result of convergence towards the speech of their

Caribbean and Pakistani peers (...) [and e]ven the changes to the past BE system suggest linguistic convergence involving all three heritage groups.ö For instance, the author argued not only that the [o:]-variant of GOAT found among his speakers originated within the Pakistani and Caribbean groups (rather than being the northern English GOAT variant) but also that [əʊ], the preferred realisation of white British participants, represented a phonetic approximation towards the qualities favoured by the other groups. Khan (2006: 298) thus concluded that òthese inter-ethnic differences can explain the trajectory of change in the Birmingham vernacular.ö

A similar picture emerged from Fox (2007), an ethnographic study of adolescents of Bangladeshi and white British (Anglo) origins from Tower Hamlets, the traditional East End of London. Fox examined the impact of recent social changes and, in particular, of heavy Bangladeshi immigration on the local English dialect, Cockney, as well as the relation between young speakersø social practices and linguistic variation and change. The author looked at the adolescentsø realisation of the PRICE and FACE vowels, which in popular London English and Cockney had undergone the Diphthong Shift (Wells 1982; also known as Southern Shift; Labov 1994) and therefore had a backed and lowered onset, respectively. Overall, traditional local variants, including [ɑ̃], [ɑɪ], [ɑ:] for PRICE and [æɪ], [aɪ] for FACE, were still used comparably frequently by her participants. For both vowels, the majority of variants was, however, made up by new realisations with a narrower, at times nearly monophthongal quality; these included fronted or centralised [æ], [aɪ], [eɪ] for PRICE and raised [eɪ], [ei], [ɛɪ] for FACE. Bangladeshi boys had not adopted the traditional London variants and showed an overwhelming preference for the innovative realisations, which had also been picked up by the Anglo (and two mixed race) boys but not, or to a much lesser extent, by the Anglo girls. This pattern of inter-ethnic variation suggested that both vowels were undergoing a reversal of the Diphthong Shift, with the change being led by the Bangladeshi boys.

The use of PRICE and FACE variants was related to the adolescentsø participation in small friendship groups and wider social networks. Younger Bangladeshi boys were the most close-knit group and had very strong ties to the Bangladeshi community; they also made great use of the new fronted PRICE and raised FACE qualities. Younger white British boys commonly mixed with older Anglo boys, whose social and linguistic practices they attempted to copy; they quite frequently realised PRICE as [ɑɪ] but had also adopted the newer variants of both PRICE and FACE. Older Bangladeshi and older white British boys

interacted on a regular basis and often engaged in joint street activities, which resulted in some degree of mutual accommodation. As Fox (2007: 295) pointed out, '[g]iven the amount of social mixing between these two older groups and the similarities of their social practices, it is perhaps not surprising that we find less use of the extreme variants associated with London English and the extreme variants used by the younger Bangladeshi boys among these older boys.' Anglo girls, on the other hand, interacted frequently with Anglo boys but had very little contact with Bangladeshi boys and with the Bangladeshi community in general; this was reflected in their strong preference for traditional London realisations of PRICE and FACE.

Fox (2007) also undertook an analysis of allomorphic variation in the use of indefinite and definite articles in prevocalic position. The results were very similar to those for the vowels: the traditional local forms [ən] and [ði:] were being increasingly replaced by forms with reduced vowels, [ə] and [ðə], followed by a glottal stop which acted as hiatus breaker (a strategy also commonly used by the adolescents in contexts where one would have expected linking /r/ or intrusive /r/ in the local British English variety). Once again, the change was being led by the Bangladeshi boys and had spread to some extent to the white British boys but not to the white British girls. Fox (2007: 275-6) traced the origins of the innovative variants of PRICE, FACE and the prevocalic articles used by Bangladeshi and other Tower Hamlets adolescents to contact with the heritage language and other external factors:

[a]s with most first generation immigrants, the English spoken by [first-generation Bangladeshi migrants] was, and is, a heavily-accented second-language variety and, I would argue, it is predominantly this variety that most second generation immigrants have been exposed to and not the local 'Cockney' variety used by the indigenous white working class community. Added to this, the Bangladeshis have often been regarded as an insular group, with little interaction taking place with other groups in the area so what appears to have emerged from this situation is a variety of English, probably influenced by Sylheti at least in terms of its phonology, which is now spoken by the majority of people in the area.

Like the Pakistani and Caribbean adolescents in Birmingham, British-born Bangladeshi migrants in London hence not only adopted and adapted L1-derived features from the previous generation; their innovative language use also had an impact on the variety of English spoken by their white British peers.

Two other recent sociolinguistic projects on London English included second-generation speakers from South Asian and other ethnic minority backgrounds in large-scale investigations of the capital's role as a source of innovation and change in present-day British English, on the one hand, and of the influence of ethnic minorities on London English itself, on the other (see Cheshire et al. 2011: 156-8 for a description of the two projects). More specifically, they were aimed at

1. looking for innovations in relation to earlier descriptions of London English, as well as the extent to which young Londoners' speech forms part of regional dialect levelling in the south-east; and
2. discovering how the London multiethnolect patterns in terms of its acquisition, the use of the various features constituting it across ethnic groups, and its status as an ethnically neutral variety (Cheshire et al. 2011: 157).

The first project, *Linguistic Innovators: The English of Adolescents in London*,<sup>3</sup> compared the English of working-class adolescents from Hackney and Havering, two localities situated in inner and outer London, respectively. Hackney, in the capital's traditional East End, was an economically deprived borough with a large ethnic minority population, whereas Havering was a predominantly white, economically more prosperous borough on the eastern outskirts of the city. The second project, *Multicultural London English: The Emergence, Acquisition and Diffusion of a New Variety* (henceforth: *MLE*),<sup>4</sup> focused on the inner city only and examined the speech of children, adolescents and young adults from an ethnically highly diverse area in North London (spanning parts of Islington, Haringey and Hackney). In both projects, participants were grouped into white British/Anglo and non-Anglo, with the latter category covering second-generation migrants from a wide range of ethnic minority backgrounds, including Bangladeshi.<sup>5</sup> Data was also collected from a group of white British informants in their 70s and 80s and (in the *MLE* project) from the

---

<sup>3</sup> Principal investigator: Paul Kerswill; co-investigator: Jenny Cheshire; research associates: Susan Fox and Eivind Torgersen (Cheshire et al. 2011).

<sup>4</sup> Principal investigator: Paul Kerswill; co-investigator: Jenny Cheshire; research associates: Susan Fox, Arfaan Khan and Eivind Torgersen (Cheshire et al. 2011).

<sup>5</sup> In the *Linguistic Innovators* project, the non-Anglo ethnicities in Hackney comprised four main groups: 'Black Caribbean, Mixed race (White/Black Caribbean), Black African, and Bangladeshi', as well as an 'Other' category (covering adolescents of 'Moroccan, Chinese, Colombian, Portuguese, or Middle Eastern' descent; Cheshire & Fox 2009: 11-2). In the *MLE* project, non-Anglo backgrounds included: 'Afro-Caribbean; Albanian; Bangladeshi; Black African; Bengali; Congolese; Filipino; Ghanaian; Kenyan; Kosovan; Kurdish; Jamaican; Moroccan; Nigerian; Portuguese; Somali; Turkish; Turkish Cypriot; and Zanzibar'; Cheshire et al. 2011: 196).



caregivers of some of the children, who were aged around 40 and tended to be first-generation migrants.

The *Linguistic Innovators* project focused on the first aim quoted above. Torgersen et al. (2006) conducted an acoustic analysis of data from this project and three other sets of recordings, the London subset of the IViE (Intonation Variation in English; Grabe et al. 2001) corpus, the COLT corpus (Corpus of London Teenage Language; Stenström et al. 2002) and some recordings of London speakers made by Labov in 1968. The aim of the study was to verify an earlier claim that recent changes found in the short vowel systems of non-standard dialects in southeastern England were the result of diffusion from the capital (Torgersen & Kerswill 2004) and, more specifically, to determine whether and to what extent Londoners participated in an anti-clockwise shift attested elsewhere (e.g. Ashford), in which FOOT was fronted, DRESS lowered, TRAP lowered and backed, and STRUT raised and backed. The results showed that on the whole, London English was also undergoing the shift. Speakers from both the capital and the periphery displayed fronted FOOT, lowered and backed TRAP as well as raised and backed STRUT vowels, which pointed to a process of levelling and convergence. At the same time, however, the Black Caribbean informants from the IViE corpus and the Hackney adolescents, especially the non-Anglos, diverged from other speakers in that their FOOT vowel was considerably more back. As Torgersen et al. (2006: 262) note, both the back variants of FOOT and the half-close back realisations of STRUT produced by these two groups resembled the qualities of these vowels in West Indian English, which suggests that the London variants may have arisen through contact with non-native varieties of English and subsequently have become a model for other speakers (in the case of STRUT). As in Foxø (2007) study, inter-ethnic relations thus appeared to be an important factor in the emergence of innovations in London English (Torgersen et al. 2006: 262).

An even stronger tendency towards innovation and divergence was found among *Linguistic Innovators* participants from Hackney for other vowels: ø[t]he most striking changes in the inner-city accents lie in the diphthong systemö (Cheshire et al. 2011: 158). As discussed above, Fox (2007) reported that PRICE and FACE were undergoing a reversal of the Diphthong Shift among Bangladeshi and Anglo adolescents in Tower Hamlets. Further evidence for such a reversal comes from Kerswill et al.ø (2008) acoustic analysis of the MOUTH, PRICE, GOAT and FACE vowels in the Hackney and Havering data. The authors explored the relation between recent developments in the London diphthong system and

changes in the periphery, where previous work on Milton Keynes and Reading (Kerswill & Williams 2005) had shown that traditional shifted qualities were being replaced by regionally and socially unmarked forms. Such levelled variants included, for example, [aʊ] for MOUTH and [aɪ ~ ɶ] for PRICE. They also found the use of [əʏ] for GOAT (GOAT fronting) to be on the increase (Kerswill et al. 2008: 461-3).

Kerswill et al.'s study demonstrated that, while London shared the periphery's movement away from traditional shifted qualities such as Cockney [æ:] for MOUTH, [ɒɪ] for PRICE, [aʊ] for GOAT and [aɪ] for FACE, speakers in the city had developed new, distinctive variants generally not attested in other places in the southeast (cf. Kerswill et al. 2008: 454, 482-483). In particular, MOUTH was realised as a backed and lowered monophthong in both inner and outer London, with an additional diphthongal variant [aʊ] found among Hackney girls. PRICE tended to display a fronted and lowered onset in Hackney and, to a lesser extent, in Havering; in inner London, this vowel was commonly monophthongised, especially within the non-Anglo group. FACE was often produced with a raised onset and a monophthongal quality, again most frequently among non-Anglo informants. GOAT, on the other hand, had two main variants: a backed and raised near monophthong, particularly characteristic of non-Anglo adolescents in Hackney, and the diphthong with the fronted offset, [əʏ]. Like the levelled variants for MOUTH and PRICE, [əʏ] was disfavoured by inner-city speakers but used by Havering girls.

Kerswill et al. (2008: 484) argue that the innovative diphthong qualities found among London adolescents diverged more radically from the traditional London English shifted realisations than the levelled forms found outside the capital, which 'suggests that Diphthong Shift reversal is more advanced in London than in the southeast periphery.' Within the city itself, the reversal appeared to be led by non-Anglos, with Hackney being more advanced than Havering. According to the authors (2008: 484), the cause of the changes affecting the London diphthong system 'is likely to be dialect contact (with other varieties of English than British), language contact, and contact with L2 Englishes.' Whereas in the periphery increased geographical mobility had been a driving force in dialect levelling processes and in the adoption of regionally and socially unmarked features, in the inner city heavy immigration and language as well as dialect contact had led to innovation among the locally-born generations, with the emergence of 'new, often socially and ethnically marked variants generated from the ethnic mix' (Kerswill et al. 2008: 486).

In sum, the *Linguistic Innovators* project showed that, while some linguistic features were found both in the capital and in the periphery, especially speakers from inner London also exhibited considerable divergence and innovation, with second-generation migrants from South Asian and other ethnic minority backgrounds playing a crucial role in these (most likely contact-induced) processes. One question the project left unanswered, however, was whether the innovative forms used by young inner-city speakers were restricted to adolescence or whether they had also been adopted by other age groups. The *MLE* project collected data from inner-city informants of a wider age range in order to investigate issues of this kind, and to shed further light on the emergence, structural properties, acquisition and use of ‘Multicultural London English’, a term used to refer to ‘the overall range of distinctive language features used in multiethnic areas of London, ... [conceptualised] as a repertoire of features’ (Cheshire et al. 2011: 154; see also the second perspective quoted earlier).

Cheshire et al. (2011) investigated the occurrence of a range of features (phonological, morphophonological, morphosyntactic and discourse-pragmatic) in the *MLE* data. An acoustic analysis revealed that, like the *Linguistic Innovators* participants from Hackney, adolescents from North London displayed raising of FACE and GOAT, lowering of MOUTH and PRICE, and a very front GOOSE vowel. There was also some ethnicity- and gender-related variation in that Anglo female speakers used much more fronted qualities for FOOT than the other groups, whereas the most extreme unshifted pronunciations of FACE and GOAT were found among non-Anglo males. Among *MLE* young adults, Anglo females tended to use more traditional variants than the corresponding adolescent group, while non-Anglo informants exhibited the innovative Multicultural London English (MLE) system. Children (aged 4-13) had adopted the MLE system as well, including some of its ethnicity- and gender-related variation. Interestingly, this was also the case for pre-schoolers, whose phonologies showed little correlation with those of their caregivers. The only feature which had not been picked up by children was GOOSE fronting, which, unlike other MLE phonological innovations, displayed the adolescent peak typical of transmission with incrementation (Labov 2007; cf. section 2.1.2).

Apart from the vowel system, Cheshire et al. (2011) looked at quotatives, past tense BE and allomorphy in the article system. The results for quotatives indicated that a new quotative expression found among young speakers from Hackney (but not Havering) was also used by children and adolescents from North London: *this is* + speaker, as in *this is*

*them ðwhat area are you from. what part?ö* (Cheshire et al. 2011: 172). This form, which was still rather infrequent on the whole, and absent from the speech of caregivers altogether, occurred most often among 8-9-year-old children. Its age distribution contrasted sharply with that of BE LIKE, which was characterised by incrementation with an adolescent peak. With regard to past tense BE, the *Linguistic Innovators* project had shown that, while adolescents from Havering tended to exhibit levelling to the *was/weren* pattern commonly found in dialects of England, Hackney speakers displayed both levelling to *was/weren* and to *was/wasn*, a pattern typical of child language acquisition, L2 varieties and Creoles; moreover, *was/wasn* occurred more frequently among non-Anglos, whereas Anglos preferred *was/weren* (Cheshire & Fox 2009). The *MLE* data indicated that the use of non-standard *was* in the inner city was not decreasing as elsewhere in England. Non-standard *wasn* was more common than non-standard *weren* across age groups and was favoured by non-Anglo informants, whereas Anglo participants made use of both levelled patterns. Lastly, the analysis of indefinite and definite articles in prevocalic position (see also Fox 2007 above) demonstrated that non-Anglo speakers of all age groups displayed a strong tendency to replace [ən] and [ði:] with the reduced forms [ə] and [ðə], followed by a glottal stop. Anglo subjects, on the other hand, showed a decrease in the use of the reduced forms with increasing age.

The results hence revealed a sharp contrast between GOOSE fronting and BE LIKE, the only two features which displayed incrementation with an adolescent peak in the *MLE* data, and the other innovations found in north London, which did not. Cheshire et al. (2011: 179) point out that GOOSE fronting and BE LIKE also differed from the other changes in that they were easily borrowable features that had spread throughout the English-speaking world. Monophthongisation of FACE and GOAT, levelling to *was/wasn* and the use of the reduced forms [ə] and [ðə] for [ən] and [ði:], on the other hand, were all features typically found in contact-induced varieties such as Afro-Caribbean English, indigenised Englishes spoken in Africa and South Asia, creoles and learner varieties, all of which were part of the inner-city feature pool (Mufwene 2001). According to Cheshire et al. (2011: 177), even the new quotative form *this is* + speaker is likely to have occurred, albeit to a much lower frequency, in some of the input varieties of *MLE*. The authors therefore argue that, with the exception of GOOSE fronting and BE LIKE, the innovations found in inner London are community-internal changes generated through language contact, though probably not through direct transfer:

[t]oo many different languages and varieties of English are spoken in the multiethnic communities we are researching for us to expect direct language contact from any one variety to London English. Nonetheless, the type of language contact inherent in group second-language acquisition seems to be at the heart of the innovations that we observe in our data (Cheshire et al. 2011: 176).

In Cheshire et al.'s view, the MLE innovations have, in other words, their origins in inner London's particular sociolinguistic setting, where, due to the high degree of multilingualism and limited access to the native target model, children tend to acquire English through unguided second-language acquisition in peer groups, selecting and modifying features from a very heterogeneous feature pool. The authors therefore claim that in multilingual immigrant communities like inner London, 'acquisition is fundamentally different from that in canonical speech communities' and that 'at least in Europe, [such communities] are sufficiently common and well enough understood for the formation of multiethnicity to be seen as a distinct and important type of community language change' (Cheshire et al. 2011: 190-1). Together with other ethnic minority groups, British-born South Asians provide an important contribution to this process.

## **2.2 English in the Indian diaspora: beyond Britain**

As noted in section 1.1, beyond Britain the variety of English in the Indian diaspora that has been described in most detail is undoubtedly South African Indian English (Mesthrie 1992; cf. also the overviews in Mesthrie 2004a, 2004b). Besides British Asian Englishes, this is the most obvious candidate for comparison with the dialect spoken by East African Indians in Leicester. South African Indian English differs from the varieties of English spoken in both India and among Indians in East Africa because, due to the lack of mutual intelligibility between Indic mother tongues (particularly Indo-European and Dravidian languages) and the absence of a common Indian lingua franca in the South African context, this variety underwent a shift from L2 to L1 by the 1960s (Mesthrie 1992, 2004b). The conditions of acquisition determined by apartheid policy, which involved limited contact with native speakers of British descent and considerable transfer from Indian languages, led to the development of features distinct from white South African English and to a certain

degree of continuity with Indian English. At the same time, though, a combination of influences also caused the emergence of differences from the latter:

in South Africa the substrate comprised of both Indic and Dravidian languages, causing a blend of Indic and Dravidian influence in InSAfE that I suspect is not found in India. And, of course, the features of L1 English of Natal as well as contact with Zulu and (to a small extent) Afrikaans made InSAfE further diverge from IndE (Mesthrie 2004b: 955).

In terms of phonology, for instance, several features typically found in Indian English are rare or absent in South African Indian English, e.g. monophthongisation of FACE and GOAT, retroflexion of /t/ and /d/, as well as interchange of /v ~ w/ (Mesthrie 2004b; see chapter 4 for the features relevant to this study). More recently, variation in South African Indian English has been investigated in the context of the sociolinguistic changes which have been affecting post-apartheid South Africa. Mesthrie (2010) undertook an analysis of GOOSE fronting among middle-class South Africans from the Black, Indian and Coloured communities, showing that, while all ethnic groups participated in this global sound change, they did so to different degrees. Indian speakers in particular were divided between a more progressive group which displayed considerable accommodation to white (fronted) norms and a more conservative group that exhibited comparably little fronting.

Among the other strands of the Indian diaspora which have received scholarly attention are Indian communities in the United States and the Pacific. In the US, Sharma (2005a) examined the use of a range of syntactic and phonological variables by a group of first-generation Indian migrants who had settled in the San Francisco Bay area, with the aim of distinguishing individual second-language acquisition features and emerging dialect traits. She found that some syntactic variables (past tense marking, verb-subject agreement, copula use) fell into the first category while others (articles) belonged to the second (for the use of articles, cf. also Sharma 2005b). However, all syntactic features depended on speakers' proficiency levels, whereas the phonological variables (rhoticity, /l/-velarisation, aspiration) did not, or did so to a much lesser extent. Instead, their use tended to correlate with informants' attitudes towards the contact situation and American culture (see chapter 4 for more details on rhoticity). Work on the Indian diaspora in the Pacific includes Zipp (2014), an investigation of patterns of lexico-grammatical usage in Indo-Fijian English, and Hundt (2014, in preparation), a research project on language and identity construction

among Fiji Indian twice migrants in New Zealand. Finally, no sociolinguistic studies have been undertaken on English in the Indian diaspora in East Africa.

### **2.3 Summary**

The survey in this chapter showed that sociolinguistic work on English in the Indian diaspora in the UK and elsewhere has been concerned with a number of questions, many of which are related to the emergence and transmission of L1-derived features or, more generally, contact-induced innovations. In research on the British Asian diaspora, the focus has predominantly been on locally-born generations. The few studies that looked at the speech of first-generation migrants invariably reported retention of L1-influenced traits. Despite common claims in the dialect acquisition literature that second-generation migrants do not acquire the foreign accent of their parents, UK-born South Asians were also widely shown to use L1-derived features. An exception in this regard are the studies of Evans et al. (2007) and McCarthy et al. (2011), who found their second-generation informants to approximate the SSBE phonological system.

L1-derived features are often functionally reallocated among British-born speakers and vary in connection with a number of external factors, including ethnic orientation, local (ethnic) identity, community of practice membership, friendship groups and wider social networks, as well as gender and age (which in turn was reported to reflect the socio-historical circumstances in which different age groups grew up). Adolescents from South Asian and other ethnic backgrounds were also shown to creatively employ a mix of Punjabi, Indian English, Caribbean Creole and Cockney elements to signal, for example, inter-ethnic solidarity and working-class alignments, and to index a new type of hybrid ethnic identity, a practice carried over into adulthood by at least some speakers. On the whole, these findings provide little support for cognitive explanations like the innate accent filter hypothesis, rather suggesting that social factors play a major role in the locally-born generation's shift to the local dialect or maintenance of L1-derived traits. Finally, a number of studies demonstrated that some (but not all) innovations generated within South Asian and other ethnic minority communities spread beyond these communities and are picked up by white British English speakers. This indicates that the varieties of English spoken by South Asian and other ethnic minority groups are an important source of innovation and change in present-day British English.

The brief sketch of work on English in other strands of the Indian diaspora showed that in some countries (e.g. South Africa) Indian communities developed varieties of English that are distinct both from Indian English and from the local dialects of white settlers, and that attitudes to the host community and local culture can also play an important role in the retention of L1-derived accent traits and in the adoption of local phonological features by first-generation migrants (e.g. in the San Francisco Bay area).



### **3. Sociohistorical background**

#### **3.0 Introduction**

This chapter provides a historical and socio-demographic description of the East African Indian community in Leicester. As a backdrop to this description, section 3.1 presents the major characteristics of Leicester's large ethnic minority population. In the main part of the chapter, I then trace the East African Indian community's diasporic journey across three continents, from the early days of Indian settlement in East Africa to its eventual demise after independence (section 3.2) and to the resettlement of East African twice migrants in Leicester (section 3.3). In describing the community's history, I touch on a number of issues that are relevant to sociolinguistic enquiry. With regard to the first stage of migration, i.e. the movement from India to East Africa, these include: which regions of the Indian subcontinent East African Indians originally came from and what languages they spoke; who they were in socio-economic and religious terms; how many migrated to East Africa; when and why they migrated; where they settled and what became of them there. Along the same lines, important questions concerning the second stage of migration, i.e. the journey from East Africa to Leicester, are the following: when and why Indians departed from East Africa; how many left and where they migrated; and finally, how many settled in Leicester; how East African Indian twice migrants differed from other South Asians in Leicester and, more generally, Britain; how they developed in socio-economic terms; and what impact their complex migration pattern had on their sense of identity.

#### **3.1 Leicester's ethnic diversity**

Leicester, the research site of the present study (cf. map 3.1), is the largest city in the East Midlands. As noted in section 1, it has one of the most numerous ethnic minority communities in the UK. Table 3.1 shows that according to the most recent Census figures, in 2011 163,203 residents or 49.5% of the city's population identified with a non-white ethnic minority background (including mixed groups; source: Census 2011, table KS201EW; ONS 2012).

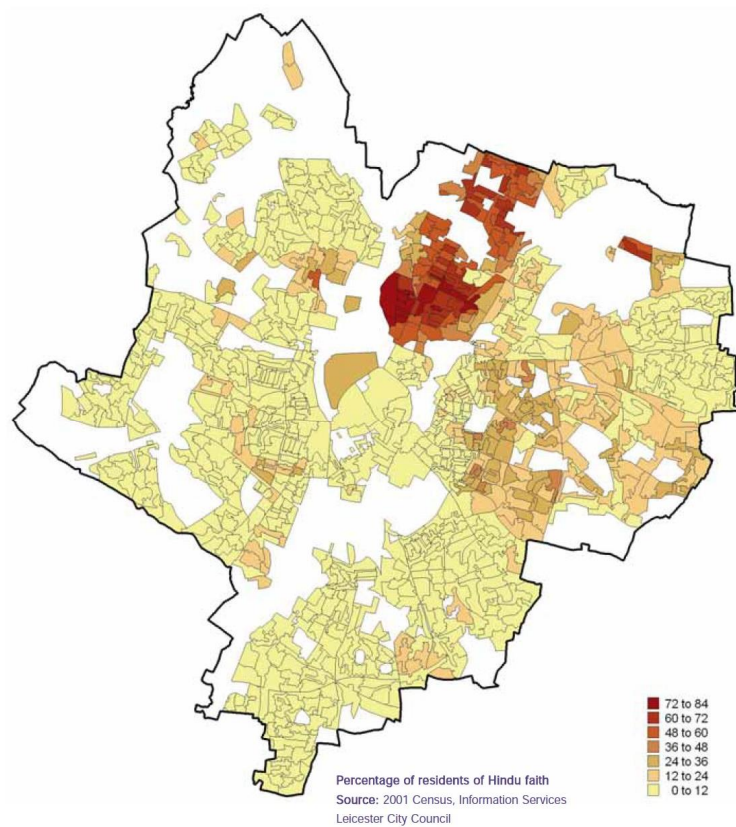


Table 3.1 also indicates that the city's ethnic minority population is mainly of South Asian origins. In the 2011 Census, 105,044 persons or 31.8% of the total population identified with one of the three main South Asian ethno-national categories (Indian, Pakistani or Bangladeshi) – and this is a conservative figure, since it does not include the mixed White-Asian and the 'other Asian' groups (which would comprise, for example, migrants of Sri Lankan origins). Compared to other British Asian communities, Leicester's large South Asian population is distinctive in terms of both its ethno-linguistic make up and its religious composition. In 2011, Indians accounted for 28.3% of the city's residents, followed by Pakistanis (2.4%) and Bangladeshis (1.1%). Leicester's South Asian population is thus prevalently of Indian origins. In terms of religion, in the 2001 Census 14.7% of the city's residents described themselves as Hindu, 11% as Muslim and 4.2% as Sikh.<sup>1</sup> Maps 3.2 and 3.3 show that the Hindu and Muslim communities are clearly concentrated in different parts of Leicester, with the former being predominant in the north

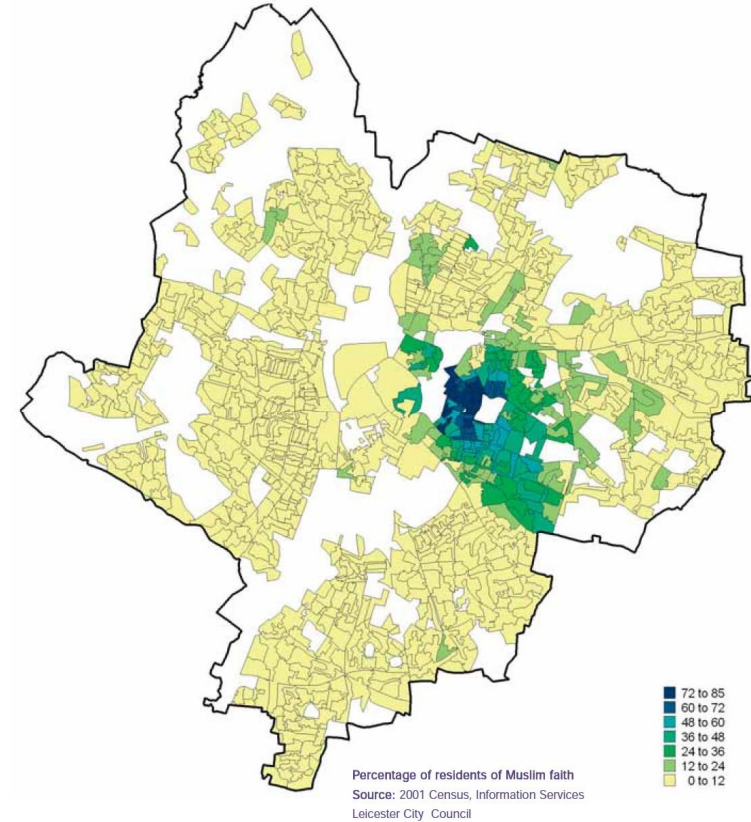
of the city and the latter in the area east to the centre. This distribution still reflects the early pattern of settlement of the South Asian population (cf. Phillips 1981). As Roberts-Thomson (2008: 6) notes, the strong presence of Indians and Hindus in Leicester sets the city apart from other conurbations with large South Asian communities because ð[i]n other English cities (outside London), minority ethnic communities are predominantly Pakistani or Bangladeshi in origin and Muslim in faith.ö

Table 3.1 Leicester population by ethnic group (source: Census 2011, table KS201EW; ONS 2012).

<b>Ethnic groups</b>	<b>Persons</b>	<b>%</b>
White: English/Welsh/Scottish/Northern Irish/British	148,629	45.1
White: Irish	2,524	0.8
White: Gypsy or Irish Traveller	417	0.1
White: Other White	15,066	4.6
Mixed/multiple ethnic group: White and Black Caribbean	4,691	1.4
Mixed/multiple ethnic group: White and Black African	1,161	0.4
Mixed/multiple ethnic group: White and Asian	3,388	1.0
Mixed/multiple ethnic group: Other Mixed	2,340	0.7
Asian/Asian British: Indian	93,335	28.3
Asian/Asian British: Pakistani	8,067	2.4
Asian/Asian British: Bangladeshi	3,642	1.1
Asian/Asian British: Chinese	4,245	1.3
Asian/Asian British: Other Asian	13,181	4.0
Black/African/Caribbean/Black British: African	12,480	3.8
Black/African/Caribbean/Black British: Caribbean	4,790	1.5
Black/African/Caribbean/Black British: Other Black	3,315	1.0
Other ethnic group: Arab	3,311	1.0
Other ethnic group: Any other ethnic group	5,257	1.6
<b>Total</b>	<b>329,839</b>	<b>100.0</b>



Map 3.2 Spatial distribution of the Leicester Hindu community  
(source: Census 2001, from Roberts-Thomson 2008: 8).



Map 3.3 Spatial distribution of the Leicester Muslim community  
(source: Census 2001, from Roberts-Thomson 2008: 9).

With regard to the community's linguistic composition, an estimate by the City Council indicates that Gujarati is the mother tongue of the majority of ethnic minority residents (50,655), followed by Punjabi (13,233) and Kutchi (7,289) (see table 3.2).<sup>2</sup> Reynolds & Verma (2007: 297) report that '[i]n Leicester, in 2000, about 22% of the school population (over 11,300) were Gujarati speakers.' The predominance of Gujarati is another aspect that singles out South Asians in Leicester, since in other British cities (again with the exception of London), Punjabi or Sylheti tend to be the main Indic languages spoken by the South Asian population. Reynolds & Verma (2007: 296) indeed report that Punjabi is the Indic language most widely spoken in Britain. With regard to Gujarati, they state that, while there are also concentrations of Gujarati-speaking migrants in Brent and Harrow (Outer London), Bolton and Blackburn (Lancashire), as well as Kirklees (West Yorkshire), '[t]he Gujarati speech community is most prominent in Leicester' (Reynolds & Verma 2007: 297).

Table 3.2 Ethnic minority languages in Leicester (source: Leicester City Council, date unknown).

<b>First Language</b>	<b>Hindu</b>	<b>Muslim</b>	<b>Sikh</b>	<b>Total</b>
Gujarati	37,453	12,848	354	50,655
Punjabi	990	1,791	10,451	13,233
Kutchi	0	7,289	0	7,289
Bengali	41	1,977	0	2,018
Hindi	907	124	59	1,090
Urdu	0	2,872	0	2,872
English & Others	1,856	6,856	932	9,645

Note: this estimate is based on data on ethnic minority languages from the 1983 Survey of Leicester and on the religion data from the 2001 Census (source: Leicester City Council, <http://www.leicester.gov.uk/your-council-services/council-and-democracy/city-statistics/languagestatistics/>, accessed 2.01.13).

The ethno-linguistic and religious distinctiveness of the Leicester Asian community is closely related to a further aspect that sets it apart from other South Asian populations in Britain: the East African origins of a large number of its members. The origins and history of this African connection are explored in the next section.

<sup>2</sup> No questions on language were included in the 2001 Census (nor, for that matter, in previous censuses), which, as Reynolds & Verma (2007: 294) point out, considerably increases the difficulty of determining the numbers of speakers of Indic languages across Britain with any accuracy. The 2011 Census included two questions on language but the results were not yet available at the time of writing.

### 3.2 The Indian diaspora in East Africa

As noted above, the history of the East African Indian community in Leicester can be divided into two stages: migration from the Indian subcontinent to East Africa and subsequent migration from East Africa to Leicester. With regard to the former, Gregory (1993: 10ff.), a comprehensive economic and social history of the Indian diaspora in Kenya, Uganda and Tanzania, distinguishes four main phases of Indian movement to East Africa. During an early period, which may have started several hundreds of years B.C. and which lasted until roughly 1890, the numbers of South Asians who moved to the region remained relatively low. This was followed by three phases of extensive migration. The first extended from 1890 until 1914; the second coincided with the interwar years; and the final one lasted from the end of World War II until the early 1960s, when East African countries gained independence. The following account draws largely on Gregory (1993) and Oonk (2006).

#### 3.2.1 Pre-colonial times

Writing on the Indian diaspora in East Africa, Twaddle (1990: 151-2) observes that 'one of the essential characteristics of South Asian settlement in this particular region of the world is its antiquity.' Commercial ties between the Indian subcontinent and East Africa in fact long predate European colonial expansion in the region, having developed at least 2,000 years ago. Some authors (e.g. Gregory 1993: 19, 44; Twaddle 1990: 152) suggest that Indian sailing ships may have been trading on the islands of Zanzibar and along the east African coast as early as in the first millennium BC, and their presence is certainly attested in sources from the first century AD, e.g. the *Periplus of the Erythraean Sea*. Over the centuries, the commercial activities of South Asian traders steadily increased, so that, when Vasco de Gama explored the region in 1497, there were sizeable Indian merchant communities on Zanzibar, Pemba and in a number of east African coastal towns (Gregory 1993: 10; cf. also Oonk 2006: 254). After 1840, when sultan Seyyid Said moved the capital of the Omani Empire to Zanzibar, the island became an even more important trading centre. South Asian merchants flourished under Arab rule, dealing in goods such as spices, goat skin, dried fish and cotton textiles, and a number of them were also involved in the highly profitable ivory and slave trades (Gregory 1993; Twaddle 1990; Oonk 2006).

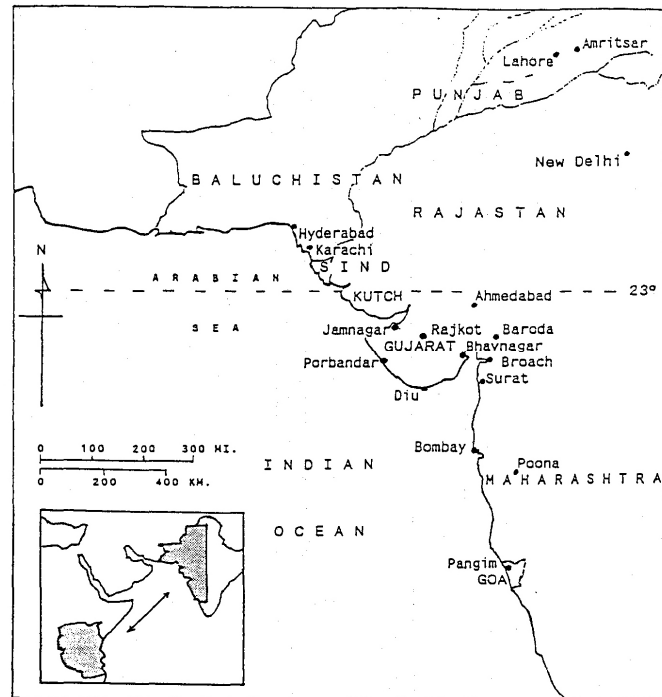
Gregory (1993: 14) reports that during this early period, migrants mainly arrived from north-western India, coming from port cities such as Broach (present-day Bharuch), Cambay (Khambhat), Surat, Karachi and Bombay (Mumbai) at first and later also from the interior (cf. map 3.4). Most maintained strong links with their homelands and recruited employees from their villages as their businesses grew. While there were some Hindus among them, the majority were Muslim, and for a long time, migration remained limited to males, with women staying in India to take care of the family and the fields. As a census from 1887 indicates, by the end of the 1880s, over 6,300 Indians had moved to East Africa (Gregory 1993: 12).<sup>3</sup> Of these, roughly 3,000 had settled on the islands of Zanzibar and the rest were spread across port cities such as Mombasa, Bagamoyo, Jumba and Dar es Salaam (see map 3.5). Although their numbers were still relatively small,

[a]n economic and social pattern had already been established in which the Asians constituted the vital middle class. Through the centuries they had proved that under conditions of relatively free competition, ... they could compete successfully with Arabs, Europeans, and Africans and attain a controlling interest, often a monopoly, in finance and commerce (Gregory 1993: 10).

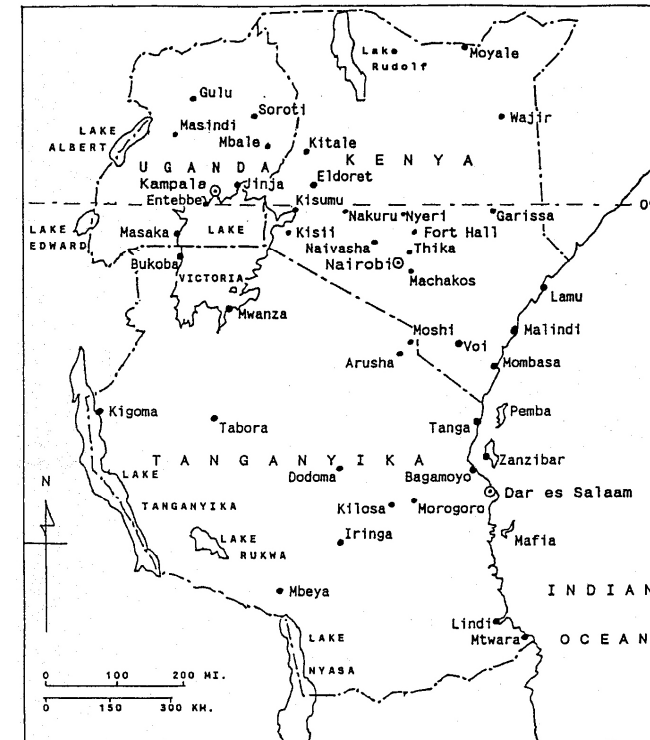
During this initial phase of migration, the activities of Indian merchants remained largely restricted to Zanzibar and the coast. With the European scramble for Africa in the 1890s, however, a large-scale movement of South Asians into the East African interior began.

---

<sup>3</sup> Gregory (1993: 12) points out that this census was rather conservative and did not include Goans and Baluchis.



Map 3.4 North-western India (1890-1947). Map showing the regions of origins of East African Indians (from Gregory 1992, reprinted in Gregory 1993: 11).



Map 3.5 British East Africa in 1960 (from Gregory 1992, reprinted in Gregory 1993: 42).



### 3.2.2 Colonial era

Until the 1870s, European colonial expansion in Africa remained confined to a few coastal areas, such as the British Cape Colony in South Africa, the French territories in Algeria and the Portuguese possessions in Mozambique, leaving the interior largely untouched. The situation changed dramatically, however, when the so-called 'scramble for Africa' began in the late 19<sup>th</sup> century. During a period of exceptionally rapid colonial conquest, western European powers gained almost complete political and military control of the African continent within a few decades. In East Africa, the main colonial powers who competed for supremacy were Britain and Germany (Gregory 1993; Schmied 2004; Oonk 2006). The British declared protectorates over Zanzibar, Uganda and Kenya in 1890, 1894 and 1895, respectively, and the Kenya protectorate, initially named British East Africa, was turned into a Crown Colony in 1920. The Germans established a protectorate in the southern part of the region after 1885. Their dominions included Tanganyika (present-day mainland Tanzania) and the area now roughly corresponding to the modern countries of Rwanda and Burundi. In 1920, after Germany lost World War I, Tanganyika was taken over by Britain as a Mandate of the League of Nations.

Britain and Germany's partitioning of East Africa marked the beginning of the second phase of Indian migration to the region (from around 1890 to the First World War), as the European powers' expansion on the mainland created new economic opportunities that attracted large numbers of new migrants. Of foremost importance in this regard is the construction of the Uganda Railway, whose trunk line was built from 1896 to 1901 and linked Mombasa to Kisumu on Lake Victoria (Gregory 1993: 160). As Oonk (2006: 256) points out, this railway 'became strategically and economically vital for both Uganda and Kenya', since it opened up the East African interior and greatly facilitated the transportation of persons, war equipment and export goods such as tea, coffee and cotton over long distances. Crucially, the project was realised through the employment of indentured labourers from South Asia. Gregory (1993: 160-2) reports that by 1903, the British had imported 31,983 Indian workers to build the railway; in subsequent years, more labourers were recruited for the construction of the railway branches and other public works, so that by the end of the indenture system in 1922, their total number amounted to 39,771. The indentured workers were mainly Sikhs and, to a lesser extent, Muslims from the Punjab and went to East Africa on three-year contracts. According to Oonk (2006: 255), around 2,500 of them did not survive and 6,500 became

invalid before the railway was completed. While most returned home after the end of their contracts, 7,278 (over 18%) stayed in East Africa (Gregory 1993: 162). Their continued presence was essential to the operation and maintenance of the Uganda Railway: ō[u]pon its completion, the railway was manned for several decades by Indian drivers, foremen, stationmasters, linesmen, telegraphers, mechanics, gangers, repairmen, upholsterers, carpenters and other artisansö (Oonk 2006: 255). As Gregory (1993: 12) notes, however, the majority settled as artisans or traders in the towns that emerged along the railway and in the surrounding areas (see also below).

The indentured labourers were joined, and soon outnumbered, by large numbers of free migrants from the Indian subcontinent. Gregory (1993: 12) estimates that in the years from 1890 to 1921, between 10,000 and 20,000 South Asian free migrants moved to East Africa. In 1921, the Indian population in the region had exceeded 54,400 (see table 3.3). Extensive South Asian immigration was only temporarily halted by the outbreak of the First World War, and during the interwar period, the number of Indians in East Africa nearly doubled, being estimated at almost 105,000 in 1939 (Gregory 1993: 12-13; cf. also Oonk 2006: 256). As a consequence of the British take-over of German East Africa in 1920, during this third wave of migration many South Asians settled in Tanganyika; furthermore, indentured migration had almost ceased, with the massive population increase resulting principally from the arrival of free migrants and natural causes (Gregory 1993: 12-13). The fourth and final phase of Indian migration to East Africa spans, as noted above, the decades between the end of the Second World War and independence in the early 1960s.<sup>4</sup> In 1962, at the closure of this period, there were around 364,500 South Asians living in East Africa: 175,000 in Kenya, 77,500 in Uganda, 92,000 in Tanganyika and 20,000 in Zanzibar (cf. table 3.3). Roughly half of the growth during this phase was due to natural increase, and Kenya was once again the territory that attracted most new arrivals (Gregory 1993: 13-14; Oonk 2006: 256).

---

<sup>4</sup> Note that this fourth phase of migration is the last one only for the ðolderø more established Indian diaspora who largely left East Africa in the late 1960s and early 1970s, and who is the focus of this study. In recent decades, however, East Africa has seen the arrival of new immigrants from South Asia (see e.g. Oonk 2006).

Table 3.3 Indian population in East Africa 1921-2000 (from Oonk 2006: 256).

	Kenya	Uganda	Tanzania
<b>1921</b>	25,253	5200	10,209 + 13,772 in Zanzibar
<b>1931</b>	43,623	14,150	25,144 + 15,247 in Zanzibar
<b>1939</b>	46,897	17,300	25,000 + 15,500 in Zanzibar
<b>1962</b>	175,000	77,500	92,000 + 20,000 in Zanzibar
<b>1969</b>	140,000	75,000	85,000
<b>1972</b>	105,000	1000	52,000
<b>1984</b>	50,000	1000	30,000
<b>1995/2000</b>	100,000	12,000	90,000

Note: This is an updated version of the figures given in Gregory (1993: 13). Oonk (2004: 256) points out that the 1995/2000 figures for Kenya and Tanzania, taken from a report by the High Level Committee on Indian Diaspora, are greatly overestimated and proposes 70,000 for Kenya and 45,000 for Tanzania instead.

The predominance of free immigration distinguishes the East African context from most other destinations of Indian movement during the British Empire, where migrants tended to go under the indenture system, as in Mauritius, British Guiana, Trinidad, Natal and Fiji, or under similar systems of short-term contracts, as in Ceylon, Burma and Malaya (see Brown 2006; Lal 2006b; Devadas 2006). Moreover, Indians who settled in East Africa generally differed from migrants who went to these colonies in terms of regional origins. The main sources of indentured labour and similar types of contract work were South India and North India (especially Bihar and eastern Uttar Pradesh), whereas north-western India remained a minor region for recruitment of these kinds of migrants (with the notable exception of the Punjabi workers who built the Uganda Railway, described earlier; Lal 2006b: 52; see also Brown 2006). In contrast, the great majority of Indian free migrants who moved to East Africa when the region was partitioned between Britain and Germany came from the north-western part of the Indian subcontinent, just like the early merchants who had traded on Zanzibar and along the East African coast.

More specifically, most East African Indian free migrants, and therefore most East African Indians in general, originated from the Kutch (Kachchh) district, the Kathiawar peninsula (also known as Saurashtra) and the inland territory of the modern Indian state of Gujarat; from neighbouring Sindh, one of the four provinces of present-day Pakistan; and, to a lesser extent, from the modern Indian state of Maharashtra (Gregory 1993: 14, 37; Oonk

2006: 255; cf. map 3.4). Smaller numbers, particularly civil servants, also arrived from Goa, which was a Portuguese colony at the time (see below). Especially in the early years of large-scale movement to East Africa, most migrants came from rural backgrounds, although Gregory (1993: 14) points out that '[i]n India, ... the line between farming and business was often thin. Many peasants supplemented their incomes by running small shops in their villages. In time some switched entirely to business or other occupations and moved to nearby towns or big cities'. The majority were economic migrants who were prompted to leave their homeland by 'the hope of rising above the poverty level': Sindh was a desertic region; inland Gujarat, Kathiawar, Kutch, and Maharashtra were frequently visited by droughts and famines; and in the second half of the 19<sup>th</sup> century, the introduction of modern medicine, sanitation and transportation had generally led to a sharp decrease of death rates and to overpopulation on the Indian subcontinent (Gregory 1993: 16-17).

Gregory (1993: 14) notes that, as in pre-colonial times, the movement of free migrants to East Africa in the early years of colonial rule tended to be restricted to young males. Among the major economic opportunities which attracted them to the region were the areas of petty trade, artisanry and (for those with some degree of education) clerical work at the lower levels of colonial administration and in the private sector, since these occupations were generally disregarded by Europeans and did not require capital investment (Gregory 1993: 36; cf. also Twaddle 1990; Oonk 2006; Brown 2006). Most Indian free migrants turned to commerce. A large number of them went to the mainland and opened small retail shops along the railway lines and in the surrounding areas, supplying goods to the railway workers and white settlers and trading with the local African population. Particularly in the decades before the First World War, living conditions in the interior were anything but easy for these early traders, commonly referred to as *duka wallahs*.<sup>5</sup> Oonk (2006: 256) describes their initial pattern of settlement and daily life as follows (see also Twaddle 1990: 151; Gregory 1993: 20-21):

[m]any of the early small shopkeepers worked 14- to 18-hour days behind counters, running errands, cleaning and organising their shops. Most of them started to work in a *duka* in the city with a brother or relative. After some time, they would open their own shop up-country with goods purchased wholesale or taken on credit from their former employers. (...) These traders lived a frugal existence, spending their profits only on the barest necessities. Many even slept in a separate space in the shop, in the interest of accumulating capital to expand their business.

---

<sup>5</sup> *Duka wallah* is a Kiswahili-Hindi compound meaning 'shopkeeper' or 'petty trader' (cf. e.g. Oonk 2006: 255).

This pattern also emerged from the sociolinguistic interviews conducted for the present study, in which first-generation participants frequently told narratives about members of earlier generations who had first settled in East Africa and set up shops in small villages without water supply, electricity, road infrastructure or medical facilities, working long hours and sometimes being forced to sleep on the shop counters at night. The significance of these early pioneers can hardly be overestimated. In Oonkø (2006: 256) words, õ[t]hese traders represented the most conspicuous image of Indian existence in East Africa. For many Africans, these shops and their products were among their first encounters with a larger world.ö Brown (2006: 36) likewise observes that õthey became essential to the East African economy and the daily lives of its peoples.ö

As the Indian communities in East Africa became more established, settlement became easier for later migrants and business opportunities grew. Gregory (1993: 59-60) reports that, after setting up their own *duka*, many East African Indian merchants became involved in a range of different commercial activities. They opened retail shops in other locations, turned to wholesaling and supplied other traders in the countryside, or expanded into the import-export trade. Crucially, õ[c]ommerce ... remained through nearly all the years of their residence in East Africa the Asiansøprimary vocation. To them it was far more important than any other occupation, and it dominated their lives and their interestsö (Gregory 1993: 43). Other areas to which Indian businessmen turned in later years included banking, money-lending and insurance, distribution and road transport, property rental, construction, agriculture and industry (Gregory 1993: 22, 36; Twaddle 1990: 151; Brown 2006: 37; Oonk 2006: 257).

The other main occupations which Indian free migrants pursued in the early years of colonial conquest were, as mentioned above, artisanry and clerical work. According to Gregory (1993: 160), the importation of indentured labourers for the construction of the Uganda Railway (cf. above) played an important role in the development of an East African Indian artisan class. Among their ranks, there were in fact quite a number of skilled workers (such as masons, carpenters and draughtsmen) who provided informal training to the far more numerous unskilled workers, so that õ[t]he indentured who chose to remain in East Africa at the end of their contracts ... formed on the whole a pool of skilled labour useful to continuing work on the railway and other government projects and in the burgeoning private sectorö (Gregory 1993: 162). During the colonial years, this pool was continually replenished by Indian artisans who arrived as free migrants. Like the indentured labourers, these were very often Sikhs from the Punjab and tended to settle as self-employed artisans.

From early on, Indian free migrants who were sufficiently qualified were also attracted to East Africa by opportunities of employment for the colonial governments and as clerks in private companies. With the progressive expansion of the colonial administrations and the growth of Indian businesses over the years, their service became indispensable: 'the Asians' clerical service in East Africa was essential to the functioning of government, commerce, and industry. Through nearly all the colonial period the Asians filled the middle ranks of the civil service, the railway and police administrations, and the office staff in business' (Gregory 1993: 185). Whereas policemen, security personnel and soldiers were generally recruited from the Punjab, civil servants and other clerks tended to come from north-western India and from the Portuguese colony of Goa (Brown 2006: 38; Oonk 2006: 255; Gregory 1993: 187). Finally, Gregory (1993: 15) also notes that, in the course of time, an increasing number of professionals such as doctors, lawyers, teachers, engineers and accountants settled in East Africa as well, attracted by higher salaries and greater business opportunities.

During the colonial years, Indian migrants in East Africa thus pursued a variety of occupations, even though, overall, the majority became involved in trade and other forms of business. Their concentration on this sector of the economy also meant that, in terms of geographical distribution, they tended to congregate in urban areas. According to Gregory (1993: 23-4), at the end of the colonial era, the proportions of South Asians in the major cities and towns out of the total number of South Asians in each territory were the following: 90% in Kenya (49% in Nairobi and 25% in Mombasa), 71% in Tanganyika (36% in Dar es Salaam) and 62% in Uganda (27% in Kampala). Besides its urban focus, two other distinctive aspects of the East African Indian diaspora were its economic significance and strong orientation towards communal religions. These are dealt with in the following two sections, together with the linguistic make-up of the community.

### **3.2.2.1 Economic significance**

Even though by the end of the colonial era, well over 364,500 Indians had settled in East Africa, they always remained a tiny community. According to Oonk (2006: 254), they never exceeded 2% of the total population, and Brown (2006: 46) writes that they accounted for 2.3% of the population in Kenya and for 1% in Tanzania and Uganda. In spite of this, the economic significance of the Indian diaspora in colonial East Africa was enormous. While a full account of its importance is well beyond the scope of this chapter (but see the extensive

treatment in Gregory 1993), gaining an impression of South Asians' contribution to the economic development of the region is essential to understand the events that took place after independence.

Some aspects of this contribution have already emerged from the discussion above, which indicated how the Uganda Railway was vital in making the East African interior much more easily accessible and how indentured labourers from the Punjab were instrumental in its construction. Furthermore, I have pointed to the essential service Indians provided as civil servants, railway personnel, policemen and soldiers to the colonial administrations and to how employment of South Asian clerks was also fundamental to private firms. Drawing on Gregory (1993), other aspects of the economic significance of the East African Indian community are the following. Indian artisans and contractors provided an indispensable source of skilled work and, according to the author, they constructed almost all private and public buildings during the colonial era (Gregory 1993: 167). The service of professionals such as solicitors, barristers, doctors, dentists and pharmacists was important not only to Indians but also to the European, African and Arab communities, and in the later phase of colonial rule, Indian teachers were increasingly employed in African schools.

South Asians also had a tremendous influence on the commercial, agricultural and industrial development of the East African territories. Throughout the colonial period, they maintained a virtual monopoly of commerce at the lower and middle levels (Gregory 1993: 61). They introduced foreign manufactured goods to Africans and provided commodities necessary to European estate agriculture; by trading with and exporting local products such as cotton, coffee, tea, and sugar, they were instrumental in the emergence of the African cash crop economy; and by developing, together with the other ethnic groups, road transport for commercial purposes, they made accessible rural areas which were not connected with the railway and thus vitally contributed to their development. The East African commercial and agricultural sectors were also greatly stimulated by the South Asian practices of business through credit and money-lending: these not only carried many of the European settlers through the economic crises of the 1920s and 1930s and helped them in other times of need but also (...) helped bring the African cultivators into a cash-crop economy, fostered the business of the African artisans, and promoted the rise of the African businessmen (Gregory 1993: 111-12). Finally, by assuming a leading role in manufacturing in Uganda, Tanganyika and Zanzibar (and setting up many important industries in Kenya, where Europeans

predominated on the whole), Indians also considerably promoted the African industrial sector (Gregory 1993: 318).

Though discussed in less detail, the great economic significance of the East African Indian community is also emphasised by Brown (2006) and Oonk (2006). Brown (2006: 46) observes that Indian migrants who had settled in the East African territories and their descendants 'had by the 1960s secured key and highly visible roles for themselves in the economies of these areas, as traders, managers, technicians and artisans, and also in the civil services.' Oonk (2006: 257) notes that throughout the colonial period, 'Europeans and Indians owned almost all the means of production and distribution.' Despite governmental efforts to promote the economic interests of Africans in the later years of colonial rule, this situation persisted until independence, so that in the 1960s, 'Indians and Europeans remained the predominant economic force' (Oonk 2006: 258). This is clearly illustrated by figure 3.1, which shows the Kenyan ethnic communities by occupation at the time.

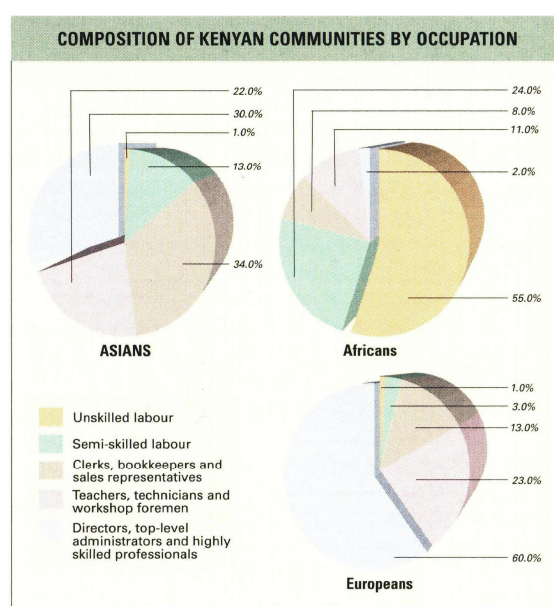


Figure 3.1 Kenyan ethnic communities by occupation, 1960s (from Republic of Kenya, 'Employment and Earnings in the Modern Sector, 1968-1972', 1972; in Oonk 2006: 257).

The majority of Europeans (60%) were employed in the category at the top of the country's occupational hierarchy, which included directors, top-level administrators and highly skilled professionals. The rest mostly worked as teachers, technicians and workshop foremen, or as clerks, book-keepers and sales representatives (together: 36%), whereas unskilled and semiskilled labourers accounted for a mere 4% of the European population. Among the



Indians, the proportion of persons pursuing occupations at the top of the hierarchy was still fairly high (30%), but over half (56%) fell into the two middle categories. As with the Europeans, only a minority (14%) worked as unskilled or semiskilled labourers. Within the African community, however, this pattern was reversed, with the great majority falling into the unskilled or semiskilled categories (55% and 24%, respectively) and only 2% having managed to work their way to the top of the occupational hierarchy. As Oonk (2006: 258) points out, this figure is a very good illustration of the three-tiered, pyramidal and highly hierarchical structure characteristic of colonial society in East Africa (and, for that matter, in many other parts of the British Empire): 'at the top was a very small European colonial elite; below them were the Indian migrants; and at the bottom were the majority of Africans.'

The Indians' position in the middle of this hierarchy, as well as their prominence in many sectors of the East African economy and in the colonial administration, were bound to raise hostility among other ethnic communities. As Gregory (1993: 62) points out, resentment among Europeans already emerged in the early years of their arrival. For example, in 1907 Lord Delamere, a leading figure among European settlers in Kenya, voiced his worries about the strong competition between European and Indian businesses as follows:

[t]here is no place for the small white man arriving in the country. All the vegetable growing for the towns is done by Indians, all the butchers with one or two exceptions are Indians, all the small country stores are kept by Indians and most of the town shops, all the lower grade clerks are Indians, nearly all the carpentry and building is done by Indians. They thus fill all the occupations and trades (Huxley 1956: 206-7; in Gregory 1993: 62).

Over 35 years later, similar concerns were succinctly expressed by another European settler, who stated that 'Kenya is governed by Great Britain and owned by India' (Anderson, Rotary address, 29 Sept. 1943, p. 4; in Gregory 1993: 65).

As might perhaps be expected, in the course of time the Indian community's privileged position and economic success became an even greater cause of resentment among the African population, who was relegated to the lowest echelon of the social hierarchy throughout the colonial period. Oonk (2006: 257) describes the situation of the African community as follows:

Africans were openly discriminated against in the provision of basic business services, such as bank loans and the issuing of trading licences. Unlike the Indians, the difficulties of the Africans were exacerbated by their lack of familiarity with the monetary economy. Furthermore, a number of Indian migrants who could speak English were often able to negotiate with the colonial government, unlike the Africans.

A similar picture is given by Gregory (1993: 76), who also argues that a major problem in the relations between the two communities was that the main areas of the economy in which the Africans could have improved their socioeconomic conditions were dominated by the Indians:

[t]he Africans' position at the bottom of the three-tiered structure of economic reward, political power, and social prestige through the colonial period was humiliating. Denied by government until the last decade the right to raise the more valuable cash crops on their land and forced into employment as labourers, they quickly perceived that their foremost opportunity for improvement was to acquire a manual skill or engage in some entrepreneurial activity as shopkeepers or transporters. Shopkeeping proved the most attractive, but there, as with artisanry and road transport, the Asians were firmly entrenched.

The author (1993: 76) asserts that in such a situation, 'it was easy for the Africans to form a dislike of their rivals, regard them as exploiters, and believe that their displacement was essential.' As both Oonk and Gregory's accounts indicate, conflict between the two groups was thus inherent in the three-tiered social hierarchy that developed during colonial rule, a view which appears to be shared by most authors. According to Brown (2006: 46), for instance, South Asians 'clearly ... had prospered under colonial rule and it was not surprising that Africans often viewed them with suspicion as colonial collaborators', and Schmied (2004: 919) observes that Indian migrants often acted as middlemen 'who could be accused of exploitation by the European settlers and even more by the Africans' (see also the discussion in Marett 1989: 17-20). As discussed in section 3.2.3, the inbuilt tensions of colonial social structure had a decisive impact on the turn events took after independence.

### **3.2.2.2 Religious composition and communalism**

As regards the community's religious make-up, Muslim traders, who had prevailed in pre-colonial times (see section 3.2.1), were increasingly joined by other religious groups, so that at the eve of independence, the East African Indian community consisted of 'a complex mosaic of religious and caste associations' (Twaddle 1990: 155). For reasons of space, I

cannot do justice to this complexity here (the interested reader is referred to the descriptions in Twaddle 1990: 154-5 and Oonk 2006: 260-1, and to the more detailed treatment in Gregory 1993: 25-36); the following overview does help, however, to understand the nature of the Indian community in East Africa and its offshoot in Leicester, as well as the events that followed independence. Indians in East Africa belonged to four main religious groups: Hindus, Muslims, Sikhs and Christians. A fifth religious community, the Jains, was frequently classified as Hindu (Gregory 1993: 25; Oonk 2006: 261). Hindus and Muslims were by far the largest groups, with the former starting to outnumber the latter after the First World War. By the end of the colonial period, the number of Hindus in East Africa (excluding Jains) had reached around 135,000, which corresponded to roughly 40% of all Indians in the region (Gregory 1993: 26). Whereas Muslims predominated in Tanganyika and Zanzibar, Hindus and Jains were particularly numerous in Kenya and Uganda. Hindus mostly spoke Gujarati and Kutchi, and, to a lesser extent, Marathi and Punjabi. They were divided into a variety of castes and sub-castes, the most prominent of which were the Patels, Lohanas, Brahmins and Vanias. Gregory (1993: 28) argues that

[a]s a whole, the East African Hindus absorbed far more of western culture than did their countrymen in India, but in many ways the appearances were deceiving. Though adopting English and a modified Hindustani, or in some instances Swahili, as a lingua franca, most still spoke within their homes and often in their community their traditional Gujarati, Kutchi, or Marathi.

As discussed below, this pattern was also commonly reported by the participants of the present study.

The Muslims numbered almost 105,000 at the eve of independence, comprising around 31% of the South Asians who were living in East Africa at that time (cf. table 1.6 in Gregory 1993: 26). The great majority spoke Gujarati or Kutchi and belonged to one of three Shia groups: the Ismailis, Ithnasharis and Bohras. With regard to the former, Oonk (2006: 261) reports that '[i]n 1952, the Aga Khan [the Ismaili leader] advised his followers to regard East Africa as their permanent home, to replace Gujarati with English as the medium of instruction, and encouraged women to wear western dress and get jobs.' A similar picture emerges from Gregory (1993: 29): '[o]ften viewed as the most liberal, progressive, and accomplished of the Asians, the Ismailis spoke English and wore western dress. They had been the first to put their daughters to work and encourage them in professional attainment.' The other two Shia sects were more conservative but had greater contact with Africans.

According to Oonk (2006: 261), the Ithnasharis were the most integrated [Muslim community] in East African society in terms of their knowledge of Swahili and intermarriages with Swahilis. Gregory (1993: 30-1) observes that many of them adopted Kiswahili as a home language and mixed more commonly with Africans than Ismailis did; on the coast, petty traders and artisans belonging to the Bohra sect freely interacted with Africans and Arabs and some Bohras also married women from these communities. Besides the Shias, smaller numbers of Sunni Muslims, mostly coming from the Punjab, settled in East Africa as well.

The other two major religious communities, the Sikhs and the Christians, were less numerous than the Hindu and Muslim groups. At the end of the colonial era, around 8% of all Indians in East Africa belonged to the former group and 7% to the latter (see table 1.6 in Gregory 1993: 26). Punjabi-speaking Sikhs mainly settled in Kenya. According to Gregory (1993: 32), [t]heir disregard of caste and willingness to work side by side with Africans were strong levelling influences (...) [and] the Sikhs adapted more readily than most Asians to the new way of life. Oonk (2006: 261) points out, however, that they still refrained from marrying outside the community (except for unions with Punjabi-speaking Hindus). Christian Indians were overwhelmingly Roman Catholics from Portuguese Goa and, like Sikhs, they tended to migrate to Kenya. Gregory (1993: 33) characterises them as follows: [t]hough adhering to many traditions, the Goans were a progressive, outgoing people within the Asian community. Far more than Hindus and Muslims, they adopted a western lifestyle and intermarried with Europeans. While the Goans originally came from a Konkani-speaking region, they had knowledge of Portuguese and English as well and Oonk (2006: 261) reports that they also used the latter as a home language.

As this overview shows, there were some differences in the extent to which different subgroups within the East African Indian diaspora adapted to new ways of life (either European or African) and in the amount of contact they had with other ethnic groups. Overall, though, Indian migrants in East Africa remained strongly oriented towards their own communities. With a few exceptions, interaction with Africans and Europeans tended to be limited and of a more superficial kind, intermarriages were very rare, and Indians were generally intent on maintaining their cultural and religious traditions and on protecting their own interests (Marett 1989: 20-21; Twaddle 1990: 155-8; Gregory 1993: 34-6; Brown 2006: 46). Quite a number of first-generation participants of the present study indeed reported that, as they grew up in East Africa, different ethnic groups tended to live in residentially segregated areas and that, particularly in smaller settlements, Indians were concentrated in the

town centres, whereas Africans lived in the surrounding villages. Most had attended schools that were predominantly or even exclusively Indian and their contact to the African population was often restricted to trade contexts or to interaction with African employees, who worked for them in the capacity of housemaids, drivers and so on.

The East African Indians' social exclusiveness or, in Twaddle's (1990: 155) words, 'communalist zealotry', had various causes (cf. the discussions in Twaddle 1990: 155-8; Gregory 1993: 34-6). In part, South Asians had already developed a marked communal orientation and critical attitude towards exploitative local rulers and colonial governments (as well as colour prejudice) at home. In East Africa, these tendencies were further strengthened by the lack of a strong government in the initial phase of colonial conquest, due to which 'the Asians were forced to provide their own schools, clinics, hospitals, and libraries, as well as their own institutions for credit, insurance, sports, recreation and, welfare' (Gregory 1993: 35), and by racial segregation and other discriminatory measures introduced by the colonial administration. While furthering the welfare of their own communities, the social separateness of East African Indians led to hostility among the Europeans and, even more so, among the Africans. As Marett (1989: 20) notes, 'this exclusiveness and concern with perpetuating communal traditions were interpreted as racial arrogance and superiority.' After independence, they became one of the main accusations against the Indian community (see section 3.2.3).

### **3.2.2.3 Linguistic make-up**

The overview given in the previous section indicates that, although a number of languages were spoken in the East African Indian diaspora, some clearly tended to predominate and that on the whole, its linguistic make-up was perhaps a little less varied than that of, say, its counterpart in South Africa, which also included Dravidian languages (see e.g. Mesthrie 1992, 2004b). To recapitulate, the main Indian languages found within the East African Indian community included Gujarati, Kutchi, Punjabi, Sindhi, Marathi and Konkani. The most widespread ones were undoubtedly Gujarati and Kutchi. Oonk (2006: 255, 261) notes that '[e]ven today, Kutchi and Gujarati remain the predominant Indian languages spoken among Indian migrants in East Africa', estimating their combined number of speakers at around 70%. As noted above, some Indian migrants (Goans) also knew Portuguese, and many picked up Kiswahili, either as an additional language or in some cases even as a first language.

According to the majority of my first-generation informants, it was common for Indians to speak two or more Indian languages and Kiswahili at the time (often in addition to English, as discussed presently). Most reported that their own linguistic repertoire included these languages (see section 5.1) and some said that they (or other members of their community) used to have some knowledge of the local African language(s) as well.

In the context of this thesis, a central question with regard to the linguistic make-up of the East African Indian community concerns the knowledge of English: to what extent did Indian migrants who settled in East Africa speak English, and how widespread was knowledge of the language among those who were born and raised on the African continent? If the latter spoke English, when and how did they acquire it? Little precise information appears to be available on the amount of English known by incoming South Asians. In discussing the difficulties faced by early migrants, Gregory (1993: 20) observes that '[a]lthough some had a smattering of English, very few knew any German, Arabic, or Swahili.' His account suggests that proficiency in the language varied greatly across subgroups: 'The Goans and the Patels, fairly versed in English, could hope for some government position. The peasant farmers, such as the Shas [a subgroup of the Jains] or Punjabis, lacked an adequate knowledge of English and had no skill in crafts or first-hand experience in business' (Gregory: 1993: 20). Since, as noted above, in the early years of Britain's expansion in East Africa the majority of migrants came from rural backgrounds, one may infer from this that many Indians who settled in the region during this period were likely to have had only limited or no command of the language.

It seems plausible to assume, however, that the number of incoming Indians with English proficiency grew in later years, as the increasing employment opportunities in the expanding colonial administrations attracted more qualified migrants, and as professionals started to join the ranks of peasant farmers (see above). The available evidence suggests that by the end of the colonial period, knowledge of the language was comparably widespread within the East African Indian community. As mentioned earlier, the Goans, Patels and Ismailis commonly spoke English. This is particularly noteworthy because the Patels and the Ismailis were the largest Hindu and Muslim groups, respectively, with the former exceeding 50,000 by 1970 (Gregory 1993: 26-7). Furthermore, Gregory's (1993: 28) comment that East African Hindus in general had adopted English (as well as Kiswahili and a local variant of Hindi) as a lingua franca indicates that command of the language was by no means restricted

to these three communities. Finally, extensive knowledge of English is also attested among East African Indians who settled in Britain (cf. see section 3.3).

Of the generations of Indians who were born and raised in East Africa, at least a part acquired English in English-medium schools. As pointed out earlier, in the early 1950s the Ismaili leader, the Aga Khan, urged his followers to introduce English as the medium of instruction. The majority of my informants reported to have attended English-medium education up to at least O-level or A-level (cf. section 5.1). In fact, the general picture that emerged from the interviews confirmed the pattern described by Gregory (1993) for the Hindu community: most participants reported that, during their childhood in East Africa, they had used their mother tongue within the family and with other community members. Kiswahili was learnt informally through interaction with African domestic workers, customers and traders and was the main *lingua franca* used with this group, who generally lacked knowledge of English. English, on the other hand, was acquired and used in school, where for many it was the language of instruction at secondary level, if not already at primary level.

Crucially, the transmission of English in educational contexts seems to have taken place predominantly via Indian teachers in Indian-only schools. Gregory (1993: 228) points to this when describing the role of this professional group in colonial East Africa:

[t]he principal beneficiaries of this service were the Asians, who through the colonial period provided all the initiative and most of the financial support in establishing and maintaining their schools. Most of these schools reflected the segregation of British colonialism in that they were restricted to Asians.<sup>6</sup>

At the eve of independence in 1960, Indian primary and secondary school teachers clearly outnumbered their European counterparts in all East African territories (Gregory 1993: 228). As discussed in section 8.2.1, the predominance of Indian teachers and pupils in East African Indian schools has important implications for the variety of English spoken by the community. Two further aspects of Indian education in the colonial East African territories are relevant in this regard. The first one is that, since a great many South Asians turned to trade and other businesses due to this sector's great potential for financial improvement, teachers often had to be recruited in India. No such statistics are available for Kenya and Tanganyika (Gregory 1993: 236) but, as table 3.4 shows, a look at the origins of Indian

---

<sup>6</sup> The author also points out, however, that in spite of this general tendency there were a number of experiments with multiracialism in colonial East Africa (Gregory 1993: 228).

teachers in Uganda at the end of the colonial era is revealing: in 1960, almost 80% came from abroad, and the proportion of expatriates reached 100% among those with higher education.

Table 3.4 Origins of Ugandan Indian teachers, 1960 (from Gregory 1993: 231).

<i>Qualification</i>	<i>Expatriate</i>	<i>Local</i>	<i>Total</i>	<i>% Expatriate</i>
Higher education	341	–	341	100
Secondary completion	363	113	476	76
Some secondary or none	–	80	80	–
<b>Totals</b>	<b>704</b>	<b>193</b>	<b>897</b>	<b>78</b>

The second aspect is that, as reported by the participants of the present study, it was relatively common for Indian parents in East Africa to send their children back to India for further education, which strengthened links with the original homeland. Several of them had in fact been there to study for a few years during their youth, often in English-medium institutions (see also section 5.1).

### 3.2.3 Post-independence period

Under colonial rule, the resentment within the African community caused by the Indians' predominance in many sectors of the economy and the colonial administration and by their social exclusiveness increased over the years. Towards the end of the colonial period, tensions between the two groups were heightened because of the languishing economy, which was mainly a result of the colonial administration's policy of promoting African interests through strengthened government intervention and control (Gregory 1993: 78-9). Their relations took another turn for the worse when, after the East African territories gained independence in the early 1960s, the political instability of the new states induced many Indians, particularly in Kenya and Uganda, to delay application for local citizenship, which was interpreted as a lack of loyalty and faith by the African governments (Brown 2006: 46-7; Oonk 2006: 258). The conflict culminated in the years after independence, as the new governments continued and expanded the earlier British policy of government control in order to Africanise the economy and, in so doing, introduced a series of discriminatory measures which principally targeted the



South Asian community. As a consequence, massive emigration of Indians from East Africa began.

In Tanzania, work permits for non-citizens were restricted to positions which could not be filled by local citizens (cf. Gregory 1993: 83; Oonk 2006: 258). While the country initially adopted a twofold policy of promoting African private commercial enterprises through financial aid and simultaneously extending state control, the situation changed dramatically with the Arusha Declaration made by President Julius Nyerere in 1967, which aimed at ða complete socialization of the economyö (Gregory 1993: 83). Following this declaration, the government nationalised the main industries, banks, insurances and buildings and assumed substantial control of importing and exporting, distribution and the retail trade. As these measures were detrimental to individual businesses, they prompted an exodus of Indians from the country, whose numbers decreased drastically from 112,000 in 1962 (combining those of Tanganyika and Zanzibar) to 52,000 in 1972 (see table 3.3).

In contrast to Tanzania, the Kenyan government strongly promoted African private enterprise (cf. Gregory 1993: 81-3; Oonk 2006: 258; Brown 2006: 47). This was achieved, on the one hand, by providing financial support to African traders and other businessmen and, on the other hand, by introducing legislation which curtailed the activities of non-citizens, e.g. the Immigration and Trade Licensing Acts issued in 1967. As a result of these measures, non-citizens, including many Indians, were increasingly refused work permits and trading licences and hence unable to find employment or to conduct businesses. Extensive emigration followed, and an inspection of table 3.3 shows that, in the years from 1962 to 1972, the Kenyan Indian population decreased from 175,000 to 105,000.

Uganda initially adopted an Africanisation program similar to those pursued in Tanzania and Kenya but then turned to a much more drastic policy, which culminated in the expulsion of the Asian community by General Idi Amin in 1972. Under Amin's predecessor Milton Obote, the country first attempted, like Tanzania, to promote African entrepreneurship while also increasing government control. In 1969, Immigration and Trade Licensing Acts were issued after the Kenyan model, but the government soon began implementing a more radical policy of socialism and nationalisation (Gregory 1993: 84; Oonk 2006: 258). Due to the increasing restrictions, a part of the Ugandan Asian community already emigrated during this period. According to Oonk (2006: 258), ðof the 78,000 (1961) Indians in the population, 25,000 of whom were recorded as citizens, only 5000-10,000 had left before the expulsion by General Idi Amin.ö Brown (2006: 47-8), on the other hand, reports that over 24,000 Indians

emigrated between 1969 and 1971 and Marett (1989: 44) observes that 15,000 British Asians from Uganda arrived in the UK before the expulsion.

After Idi Amin took power in 1971, the already precarious situation of Indians in Uganda took a dramatic turn for the worse. On 4 August 1972, the dictator held a speech in Tororo in which he accused the Asian community of economic sabotage and announced that non-citizen Asians were to leave the country within 90 days (see Marett 1989: 30-50 for a detailed chronology of the expulsion). A few weeks later, the soon-to-be expelled were further told that they were only allowed to take £50 per head of family and their personal belongings with them. Amin's order affected South Asians with British passports, who made up the overwhelming majority of non-citizens, as well as those who had retained Indian, Pakistani or Bangladeshi nationality. Going by the figures of 25,000 (1961) and 23,242 (1971) citizen Asians given in Oonk (2006: 258) and Marett (1989: 34), respectively, the non-citizen category would have included well over 50,000 Asians (a part of whom had already left Uganda; cf. above). Moreover, Amin's decision affected thousands of Indians who were unable to have their Ugandan citizenship verified by the authorities (Marett 1989: 33-5). Consequently, the overwhelming majority of Indians, citizens and non-citizens alike, left Uganda within the three months. After Amin's deadline, local newspapers' estimates of the number of Asians who had remained in the country ranged from (often inflated) 8,000 to 2,000 (Marett 1989: 47). Brown (2006: 48) gives a figure of 2,000 and Oonk (2006: 259) states that there were only 1,000 Indians in Uganda in 1973. The assets they were forced to leave behind amounted to an estimated £100-150 million (Marett 1989: 48; Brown 2006: 48).

Thus, within a decade over half of the Asian population in Tanzania, 40% of the Indians in Kenya and virtually the whole Ugandan Asian community left East Africa. According to Oonk (2006: 259), on the whole, comparably few of the migrants chose to return to their original homelands, as economic opportunities on the Indian subcontinent were more limited than in Western countries. A sizeable number migrated to Canada and the US, which had relaxed their previously restrictive immigration policies and become open to highly skilled and professional migrants. The expellees from Uganda were scattered all over the world, with 8,000 going to Canada, 3,000 to the US, at least 10,000 to India, 2,000 to Pakistan, 6,000 to Europe and smaller groups to Malawi, Australia and New Zealand (Brown 2006: 48; see also Marett 1989: 30-50).

Due to the former colonial connections, though, Britain became the main destination for Indian twice migrants from East Africa. Many had British passports; some had been to the

UK before, e.g. on business trips or for further education; and the majority already had contacts there (Marett 1989: 28-9; Kalra 2006: 338; see also below). For example, of the 68 Ugandan Asian families that were the focus of Marett's study (1989: 28), only two had neither relatives, nor friends, nor acquaintances in Britain before their arrival. According to Brown (2006: 47), the Kenyan Indians who migrated to Britain numbered 5,000 in 1965, 6,000 in 1966, and 12,000 in 1967, with another 12,000 arriving in the first two months of 1968, before the British government introduced the controversial 1968 Second Commonwealth Immigration Act (cf. e.g. Khadria 2006: 69). Marett (1989: 5-6) reports that the number of East African Indian migrants in the UK increased from 6,000 in 1965 to 31,600 in 1967. Another peak was reached in the months after Idi Amin's expulsion order, when 29,000 Asian refugees arrived from Uganda (Brown 2006: 48; Khadria 2006: 69). Kalra (2006: 338) gives a general estimate of roughly 50,000 Indians migrating from East Africa to Britain in the early 1970s and Robinson (1993: 232) reports that the East African Indian population in the UK grew from 68,000 in 1971 to 160,000 in 1976 (though he notes that the latter figure may be exaggerated). The great majority of East African Indians who went to the UK congregated in London and Leicestershire (Robinson 1993: 242-3), particularly in the city of Leicester, the research site of the present study (Phillips 1981; Marett 1989; Brown 2006: 49).

### **3.3 The East African Indian diaspora in Leicester**

When East African Indians arrived in Leicester, the city already had a sizeable ethnic minority population. Like many other British conurbations, it had experienced a first major wave of immigration from the Indian subcontinent in the 1950s and 1960s, when Commonwealth citizens could still enter the UK without restrictions and the war had created a high demand for labour in the country's industries, as well as the public transport sector and the National Health Service (see e.g. Brown 2006; Kalra 2006). Phillips (1981: 103) reports that South Asians were first attracted to Leicester by employment opportunities in the heavy industry, textile mills and engineering. As in other British urban centres, these early migrants tended to be males who found work as unskilled labourers, usually with the intention of staying for a limited period of time only, and who were soon joined by other men from their villages through chain migration. In the 1960s, however, the government's introduction of restrictive immigration controls led to the end of primary male immigration. As elsewhere, Asian men in

Leicester were progressively joined by family members from the subcontinent, the community stabilised, and temporary stay turned into permanent settlement (Phillips 1981: 104-5). Migrants who arrived to Leicester during this first wave mainly came from the Punjab, Gujarat and Pakistan (Marett 1989: 1), sometimes via other cities such as Birmingham and Coventry (Phillips 1981: 103). According to the census data reported in table 3.5, by 1971 the numbers of migrants from India, Pakistan and Bangladesh who lived in Leicester exceeded 12,000.

Table 3.5 Asian population in Leicester, 1951, 1961 and 1971 (based on census data; from Phillips 1981: 102).

	1951			1961			1971		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Asia									
India	290	279	569	1219	608	1827	6340	5170	11 510
Pakistan/Bangladesh	32	17	49	98	11	109	510	265	775
Others	4	2	6	134	42	176	400	310	710
Africa									
Kenya	8	6	14	901	729	1630	2525	2280	4805
Tanzania							540	475	1015
Uganda							565	450	1015
Others							175	185	360
Total	334	304	638	2352	1390	3742	11 055	9135	20 190

Table 3.5 also shows that in the 1960s, the city's Asian population was increasingly enlarged by the arrival of the twice migrants from East Africa. While in 1961 there were only 1,630 East African Indians in Leicester, all of whom had come from Kenya, a decade later the number of Kenyan Asians had risen to 4,805. According to Marett (1993: 249), the overwhelming majority (3,000) were among those who moved to Britain in the first three months of 1968 in order to beat the Second Commonwealth Immigration Act (cf. section 3.2.3). Moreover, during this period the Kenyan Asians were joined by smaller groups of Indians from Tanzania (1,015) and Uganda (1,015), so that in 1971, East African Indians in the city numbered nearly 7,000, making up around a third of the total Asian population (20,190).

The presence of a substantial East African Indian community and of large numbers of other Commonwealth immigrants in the city, combined with the suddenness of the heavy influx of Kenyan Asians in early 1968, caused Leicester to follow a rather harsh course of action when Idi Amin announced the expulsion of Asians from Uganda in August 1972 (Marett 1993: 248-9). When the news reached Britain, Leicester City Council reacted by

inserting several advertisements in the *Ugandan Argus* advising Asians not to settle in Leicester, claiming that housing, educational, social and health services were already stretched to the limit (figure 3.2). Because of the Council's action, the city regained the reputation of the most unwelcoming of all places to the Ugandan Asian refugees, even though the responses of other local authorities, e.g. Birmingham, Bradford, Ealing and Brent, had in fact been at least as negative (Marett 1993: 248).

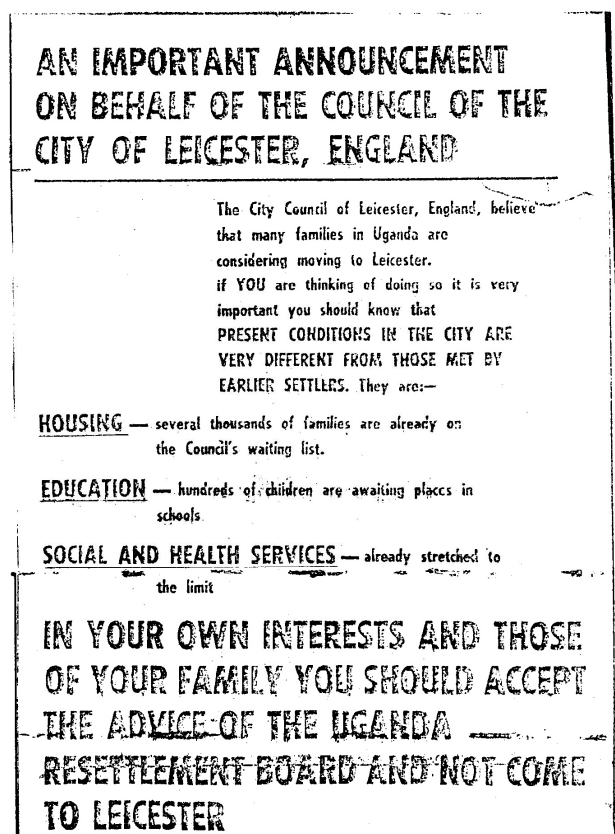


Figure 3.2 Leicester City Council advertisement in the *Ugandan Argus* advising Ugandan Asians not to settle in Leicester, 15 September 1972 (from Marett 1989: 39).

The Council's attempts to discourage Ugandan Asian expellees to move to Leicester were, however, largely unsuccessful, and so were the efforts of the Uganda Resettlement Board, the government committee which had been set up to deal with the mass arrival of Ugandan Asians, to resettle the refugees in so-called 'non-saturation' points, i.e. areas without large immigrant populations (see Marett 1989: 38-40, 1993: 249-50; Robinson 1993: 242). As a representative of the Ugandan Asian community (quoted in Marett 1989: 40) succinctly put it, the reason for the failure of these endeavours was that, as had been the case with other East African Indian migrants, the refugees' choice of specific destinations in the UK was essentially determined by pre-existing links: 'if we had relatives in a place, that decided the

matter.ö In 1978, six years after the expulsion, the Leicester Council for Community Relations estimated that around 10,500 Ugandan Asians had settled in the city (see table 3.6). Together with Indians from Kenya (7,000) and Tanzania (2,000), they numbered around 19,500 and had come to account for about half of the Asian population, which had shot up to 42,000. A few years later, Phillips (1981: 104) remarked that East African Indians had become öthe dominant sub-group in the Leicester Asian communityö.

Table 3.6 Asian communities in Leicester, 1978 (source: Leicester Council for Community Relations; in Phillips 1981: 104).

	Number in group*	Proportion of Asian population (%)
Ugandan Asians	10 500	25·0
Kenyan Asians	7000	16·7
Tanzanian Asians	2000	4·8
Punjabis (Sikh)	8000	19·0
Pakistanis/Bangladeshis	3000	7·1
Rest of Indian Subcontinent (mostly Gujaratis)	11 500	27·4
Total	42 000	100

Descriptions of East African Indians in Leicester and, more generally, in Britain invariably draw attention to their distinctiveness with respect to the earlier migrants from India, Pakistan and the region that became present-day Bangladesh. According to Phillips (1981: 108), for instance, ö[t]he East African refugees differed greatly from the immigrants who had hitherto settled in the city [of Leicester].ö In a similar vein, Brown (2006: 49) argues that öit was clear that this was a distinctive strand of migration, very different in kind from that of the unskilled Pakistanis and Bangladeshis who had arrived in the 1950s and 1960sö and Reynolds & Verma (2007: 294) likewise point out that ö[t]here were important socioeconomic differences between the members of these two immigrant groups.ö The reasons for these claims are apparent from an examination of the history of the Indian diaspora in East Africa (cf. section 3.2): whereas migrants from the subcontinent were often unskilled male workers from rural backgrounds who had arrived to Britain through chain migration, Indians from Kenya, Uganda and Tanzania tended to come from urban areas and had migrated as families. They had pursued a variety of occupations in East Africa, including commercial, clerical, artisanal and professional ones, and many of them were educated and

had some knowledge of English (see also the discussions in Phillips 1981: 108; Ballard 2004: 4; Brown 2006: 49; Reynolds & Verma 2007: 294; Khadria 2006: 69). Brown (2006: 49) further points out that some had considerable financial resources which they had managed to export from East Africa.

Marett (1989: 8) takes a slightly more critical stand on this issue: 'all generalizations are in part falsifications, and it is easy to expose the myth that all members of this group were English-speaking, with middle-class occupations reinforced by capital which they had managed to transfer to this country.' She also concedes, however, that 'it can be speculated that many did become socially mobile downwards, because they had lost their traditional middlemen roles, particularly in Kenya and Uganda' (Marett 1989: 8). Some insight into the levels of education and amount of English knowledge East African Indians had upon arrival in Britain can be gained by inspecting the data from 1974 provided by Robinson (1993; from Smith 1976). With regard to education, Robinson reports that 59% of East African Indian men and 41% of East African Indian women had some kind of formal qualification. The most common ones were O levels (22% of the men and 15% of the women) and CSE, the Certificate of Secondary Education (9% of the men and 10% of the women). Compared to Indians from the subcontinent, East African Indians 'had a somewhat less polarized distribution', with a smaller proportion possessing degrees and A levels but a smaller proportion also possessing no qualifications at all (Robinson 1993: 234).<sup>7</sup>

Table 3.7 Percentage of spoken English levels among Indians and East African Indians, 1974 (from Smith 1976, in Robinson 1993: 235).

	Indians		East African Asians	
	Men	Women	Men	Women
Fluent	43	22	56	33
Fairly well	28	15	21	24
Slightly	18	36	14	22
Not at all	7	24	5	19
Not stated	4	3	3	1

Concerning the knowledge of English, table 3.7 reveals that in 1974 77% of East African Indian men and 57% of East African Indian women reported to speak the language fluently or fairly well. Especially the percentage of respondents who stated that their English was fluent was markedly higher among East African Indians (56% of the men and 33% of the women)

<sup>7</sup> Note that this comparison does not include Pakistanis and Bangladeshis from the subcontinent.

than among Indians from the subcontinent (43% of the men and 22% of the women). As Robinson (1993: 234) points out, this is particularly noteworthy considering that many of the direct Indian migrants had been in the UK for a considerably longer period of time than East African Indians had.<sup>8</sup>

As noted above, in spite of their previous entrepreneurial and professional experience, formal qualifications and knowledge of English, East African Indians generally became socially mobile downwards after their arrival in Britain. According to Phillips (1981: 108), among those who went to Leicester some sought accommodation in Highfields, a traditional immigrant reception area to the east of the city centre with a heavy concentration of Asians, whereas others settled in Belgrave, a neighbourhood to the north of the centre which at the time had a substantial proportion of white immigrants but which offered larger housing and could therefore accommodate extended families (see map 3.1). Some Kenyan Asians had brought enough capital to buy property, but Ugandan Asians had to move into privately rented accommodation. They obtained little support from the City Council and most had to move in with relatives, which led to a high degree of overcrowding (Marett 1993: 252). Participants of the present study frequently reported that they (or their parents) had experienced situations in which two people had to share the same bed, with one person working day shifts and the other working night shifts. In terms of employment, qualifications of East African Indians were not always recognised by British authorities and many had to take low-status occupations such as factory jobs. For instance, Marett (1993: 254-5) reports that, although in May 1973 around 300 (mostly) Ugandan Asian pupils still had no school place and the Leicester Director of Education blamed the situation on a shortage of teaching staff, a number of Ugandan Asians teachers and headteachers were unemployed because their teaching qualifications had not been recognised. Furthermore, women, who did not use to work outside the home in East Africa at the time, were often forced to seek employment in order to sustain the family.

Within a few years, however, the socioeconomic situation of East African Indians improved considerably. In terms of housing, by the late 1970s most Ugandan Asians who had had to rent private accommodation had accumulated enough capital to acquire property (Phillips 1981: 108; Marett 1993: 253). Many joined the rapidly expanding East African

---

<sup>8</sup> While it therefore seems plausible to conclude that fluency in English was relatively widespread among East African Indians who migrated to Britain, it needs to be borne in mind that to this day there are a number of elderly migrants in Leicester who have very limited proficiency in the language. This emerged both from visits to community centres undertaken as part of my fieldwork and from the sociolinguistic interviews, in which several participants stated that their parents or grandparents (particularly their mothers or grandmothers) had never learnt English because the strong Asian presence in Leicester ensured that one could 'get by' speaking Indic languages only.



Indian community in Belgrave, which 'subsequently evolved as one of the more prestigious central Asian residential areas ... [and] remained predominantly East African territory' (Phillips 1981: 108). Over the years, Kenyan and Ugandan Asians also began moving into newly constructed estates in the suburbs (Marett 1993: 253). A rapid change from the private rental to the owner-occupier sector also emerges from Robinson's (1993) investigation of the long-term resettlement of East African Indians in Britain. Combining figures on housing tenure from Smith (1976) and Brown (1984), the author shows that the proportion of East African Indians who lived in privately rented accommodation decreased from 34% in 1972 to 5% in 1982. The proportion of owner-occupiers, on the other hand, increased from 61% to 73%, so that by the early 1980s, East African Indians had come to be over-represented in this sector (Robinson 1993: 240).

With regard to employment, the evidence suggests that many East African Indians in Leicester moved from factory jobs and other types of low-status work to self-employment within a rather short period of time. Marett (1993: 251) observes that by the end of the 1970s, there were reports of Ugandan Asians opening shops and post offices, setting up other kinds of businesses, and acquiring factories in the city. Robinson (1993: 238-9) found not only that East African Indians in the UK 'moved from being under-represented in self-employment in 1974 to being heavily over-represented in this category by 1985' but also that the period between 1974 and 1983 saw a radical transformation of their socioeconomic status. Based on the data from Smith (1976) and Brown (1984), the author shows that the proportion of manual workers among East African Indians dropped from 70% to 56% for men and from 60% to 42% for women. In contrast, the proportion of those who had white-collar occupations increased from 30% to 43% for men and from 40% to 59% for women. Among the white-collar workers, the percentages of those with professional and managerial jobs displayed an even sharper increase, rising from 10% to 22% for men and from 2% to 7% for women (see also section 5.1 for the occupations of the first-generation participants of the present study). Moreover, by 1984 East African Indians had outpaced both Indians from the subcontinent and the white population group in terms of formal qualifications. According to Robinson (1993: 236), '[t]his suggests that the decade 1974-84 saw East African Asians re-qualifying and reskilling themselves for the new labour market opportunities which Britain presented to them.'

Two decades after the mass arrival of Indians from East Africa, Robinson (1993: 241-2) therefore assessed their upward social mobility as 'a remarkable success story': '[i]n many

cases East African Asians had already gained parity with their Indian counterparts by the early 1980s and there are clear signs of an emerging parity between many characteristics of the white and East African Asian populations (...). Few other minority groups in Britain have achieved so much in such a short period of time.ö In a similar vein, Kalra (2006: 338) observes that East African Indians quickly established themselves as the business elite of the Indian community in Britain and highlights their economic achievement by arguing that especially öEast African Gujarati businessmen have re-established themselves in a rags-to-riches story that is repeated in almost all the parts of the world where they resettled.ö

Not the least because of East African Indians' strong belief in education as an essential means of socioeconomic improvement, the trend towards upward social mobility continued with subsequent generations. Marett (1993: 254-5) draws attention to the importance of education among Ugandan Asians. She reports that many of those who began school or college in Leicester in 1972 obtained professional qualifications or degrees, and that among the 68 families she studied, there were 28 graduates. In the sociolinguistic interviews conducted for this study, participants reported that parents often worked double shifts in order to send their children to good schools. As discussed in section 5.1, the overwhelming majority of second-generation interviewees had obtained (or were planning to obtain) a university degree and had white-collar occupations.

Several factors account for the East African Asian ösuccess storyö in Leicester and, more generally, in Britain. Robinson (1993: 245) asserts that one of the advantages East African Asians had upon arrival in Britain was that they found a pre-existing Asian community to which they could turn for support. Although many were virtually destitute upon arrival, the resources they brought with them in terms of entrepreneurial skills, professional experience, formal qualifications, and English knowledge certainly also facilitated resettlement and socioeconomic improvement. Migration as family unit played an important role in that, as Kalra (2006: 338) observes, it provided social capital that was instrumental in setting up business and moving into the self-employment sector.

Furthermore, two psychological factors are likely to be of great relevance in this respect. Firstly, both Marett (1989: 8) and Robinson (1993: 238) argue that the loss in socioeconomic status many East African Indians experienced when emigrating created a strong drive to regain the social positions and life styles they had had in East Africa. Secondly, as Robinson (1993: 236) points out, East African Indians had no myth of return. Whereas many economic migrants from the subcontinent had gone to the UK with the

intention of returning to their homelands one day (often after retirement), the mass exodus of Indians from East Africa had been prompted not by economic reasons but by political pressure from the newly independent states. Since East African Indians left because they were not wanted in their adopted homes anymore, migration involved a more radical break with the past for them, and it seems reasonable to assume that this may have led to stronger tendency to view the new host country as a permanent home, and to a greater willingness to build up a new life there.

The absence of a myth of return clearly emerges from Marett's (1993) investigation of the situation of Ugandan Asians in Leicester twenty years after the expulsion. The author reports that 'significantly there is now a strong sense among the Ugandan Asians of belonging to Leicester' (Marett 1993: 256). In surveys conducted in 1992, several members of the community asserted that three quarters of them were better off in Britain than in Uganda, and some viewed the expulsion as 'a blessing in disguise' (Marett 1993: 256). When the Ugandan High Commissioner visited Leicester in 1992 in order to persuade Asian businessmen to resettle in Uganda, his attempt remained largely unsuccessful. The interviews conducted for the present study yielded a similar picture. Several first-generation participants had gone back to East Africa to visit their previous homes. A few had been back several times, and some still had relatives there, particularly in Kenya. No one, however, intended to resettle in East Africa permanently (nor, for that matter, in India, even though many had retained strong links with the subcontinent). Most stated that they did not want to leave Britain anymore. The reasons given for this were that they had lived in the country for so long, that they had achieved so much in socioeconomic and cultural terms, and that their children had grown up there. Many informants also showed a positive attitude towards Leicester. Aspects of the city that tended to be especially valued were its multiculturalism and the peaceful coexistence of different ethnic and religious communities.

In spite of the absence of a myth of return, the narratives about East Africa recounted by first-generation participants were often extremely positive. Most of them reported to have very beautiful memories of their childhood and youth in Uganda and Kenya. Many claimed that the Indian community in East Africa was very close-knit at the time, with Hindus, Muslims and Sikhs interacting freely and peacefully and attending each other's festivals, marriages and funerals. Crucially, this sense of bonding was often felt to have lasted to the present day and to have translated into a distinct sense of identity among East African Indians in Leicester. Informants frequently related anecdotes about Indians from East Africa using

Kiswahili with each other to bring back memories of the ‘good old times’ (or if they wanted to communicate with their spouse without being understood by their children), and some said that to this day, somebody from East Africa felt like a brother to them. Many also felt that Indians from East Africa were clearly culturally different from direct migrants from the subcontinent. One participant pointed to the absence of a myth of return as one source of the distinctiveness of the East African Indian community; others stated that East African Indians were more open, progressive and dynamic than subcontinental Indians. They saw themselves as the products of three cultures and, related to this, some argued that East African Indians’ greater familiarity with British customs had allowed them to adapt more easily to life in the UK. Interestingly, this sense of distinctiveness also extended to language. East African Gujarati, for instance, was thought to be different from the varieties of Gujarati spoken on the subcontinent (commonly regarded as the ‘pure’ form of the language), and there were frequent reports of the use of lexical borrowings from Kiswahili (often referring to food and household items, e.g. *fagio* ‘broom’, *sahani* ‘plate’, *kijiko* ‘spoon’). Several informants also affirmed that East African and subcontinental Indians differed in their English accents. Although they usually found it difficult to pinpoint the exact causes of divergence, most claimed that if they spoke to an Indian on the phone they would be able to tell whether that person was from East Africa or from the subcontinent.

Among the East African Indians interviewed for the present study, the distinct sense of identity felt by the first generation appeared, however, to have largely faded away in the subsequent generation. Even though some second-generation participants had been to East Africa to see the place where their parents had grown up, the great majority stated either that they felt no emotional connection with East Africa or that they felt some connection but that it was not as strong as that felt by their parents’ generation. In most cases, their sense of identity seemed to revolve principally around the British and Asian components of their heritage. Though weaker than those of the first generation, second-generation informants’ ties to India were generally stronger than those to East Africa, and many had been to the subcontinent more than once, to visit relatives or travel. Most had positive attitudes to Leicester and reported that they liked living in the city. In terms of identity, they almost invariably described themselves as British Asian, stating that they felt both cultures to be part of their heritage (even if there was some variation in the degree of identification with one or the other component).

The participants' reports thus suggested that the double diaspora situation of East African Indians in Leicester had had a powerful impact on first-generation migrants' self-perception, leading to a strong sense of distinctiveness vis-à-vis direct migrants from the subcontinent that also involved language. This sense of a separate East African identity appeared, however, to be vanishing among second-generation speakers.

### **3.4 Summary**

This chapter began with a brief profile of Leicester's ethnic minority population, pointing to the differences between the city's large South Asian community and those in other British urban centres. Leicester is in fact characterised by a very strong presence of Indians, Hindus and Gujarati speakers and, most notably, its population comprises a large number of Indian migrants from East Africa. The rest of the chapter focused on the history of the city's East African Indian community. It showed how in British East Africa, Indian migrants provided a vital contribution to the development of the local economy and of the infrastructure of British rule; how, due to their role as middlemen in colonial society, they became the target of governmental Africanisation programmes after independence; and how this led to a large-scale exodus of the Indian population from East Africa, culminating in the expulsion of Asians from Uganda in 1972. The description of the religious and regional-linguistic composition of the Indian diaspora in East Africa indicated that Indian migrants displayed a strong orientation towards their own communities. Knowledge of English is likely to have spread considerably among them during the colonial period, and this process appears to have been characterised by continuous input from the subcontinent. Lastly, the chapter also traced the resettlement of East African Indians in Leicester. I argued that their previous experience of migration distinguished them from other strands of the British Asian diaspora from the outset. Among others, the drop in status they experienced upon arrival in the UK and the absence of a myth of return to the original homeland contributed to a strong drive towards upward social mobility, which led to a remarkable improvement of the socioeconomic situation of East African Indians in their new host country within a relatively short period of time.

## 4. The linguistic variables

### 4.0 Introduction

This chapter introduces the linguistic variables that are researched in chapters 6 and 7: postvocalic /r/ (section 4.1) and the FOOT, STRUT and NURSE vowels (section 4.2). For each variable, I first provide a definition and the relevant background information. This includes an account of the features' history in British English and an overview of some of the present-day regional variation they exhibit. This general introduction is followed by a description of the variables in the three input varieties: Indian English, East African English, and East Midlands English. For postvocalic /r/, this description covers two main aspects: the presence or absence of coda /r/ in prepausal and preconsonantal position or, in other words, (non-)rhoticity, and the phonetic realisation of rhotic consonants. If available, I also include information on two phenomena related to non-rhoticity, linking /r/ and intrusive /r/. The description of the vowels deals with their phonemic status, phonetic quality and duration.

### 4.1 Postvocalic /r/

#### 4.1.1 Postvocalic /r/ in prepausal and preconsonantal position: (non-)rhoticity

Varieties of English around the world can be seen as falling into two broad groups, depending on the pattern of phonotactic distribution of the consonant /r/ they exhibit. In varieties belonging to the first group, /r/ is pronounced in all positions, regardless of the phonetic environment it occurs in. The second group permits an overt phonetic realisation of /r/ only when it precedes a vowel, as in *brat* or *carry*, but not when it occurs in non-prevocalic position or, in other words, before a consonant or pause, as in *bark* or *star* || (see e.g. Wells 1982: 75-76, 218; Trudgill 1999: 25-26; Hughes et al 2005: 63). Varieties of the former type are generally referred to as *rhotic* or *r/-ful*, whereas the latter type is known as *non-rhotic* or *r/-less*. In sociolinguistic work, the occurrence of /r/ before a consonant or pause is commonly referred to as *postvocalic /r/*, *coda /r/* or *non-prevocalic /r/*.

Well-known non-rhotic accents of English include Received Pronunciation (RP), most English English dialects and Welsh English, as well as certain varieties of American English (particularly those spoken in New York City, eastern New England and the southern United States), Australian English, (most of) New Zealand English, and (most) White South African English; often-cited rhotic varieties are Scottish English, Irish English, and most varieties of American English and Canadian English (see e.g. the overview in Schneider 2004). Rhoticity also occurs as a relic feature (Chambers & Trudgill 1998) in a few regions in England, especially the Southwest and Lancashire, and, according to some authors, in Northumberland (e.g. Beal 2004; Upton 2004b; cf. map 4.1). Indigenised second-language and other contact-induced varieties exhibit variation in the phonotactic distribution of /r/ as well. For example, Schneider (2004) reports that in the Caribbean, non-rhoticity is found in Trinidad and Tobago but not in Bajan; moreover, while postvocalic /r/ is absent from most African, Asian and Pacific accents, it is commonly pronounced in Philippine English, Indian English and Pakistani English (see also Mesthrie 2004c and section 4.1.3.1).

As this world-wide divide suggests, [r]hoticity is a very important feature for defining the relationships between varieties of English (Maguire et al. 2010: 97). This view is supported by empirical evidence. For instance, McMahon et al. (2007) used a new quantitative method based on comparing cognate words across related languages and dialects in order to measure the phonetic similarity of 20 varieties, including not only various present-day English dialects but also West Saxon Old English, Old and Modern Icelandic, and German. Their study uncovered a major division among the varieties investigated, illustrated in the network diagram in figure 4.1 (from McMahon et al. 2007: 136).

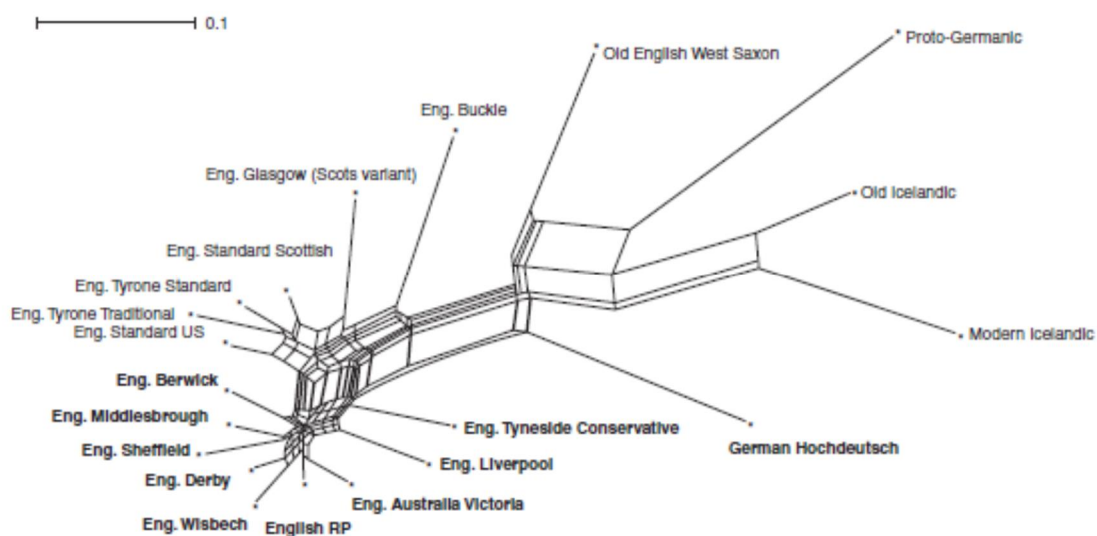


Figure 4.1 Network diagram displaying the phonetic similarity of 20 language varieties (McMahon et al. 2007: 136).

In order to identify the cognate words and thus the linguistic features which were responsible for this divide, the authors compared two varieties located on the same side of the split, Standard US and Glasgow, and then contrasted the latter with a variety placed on the other side of the split, RP. Their analysis showed that the majority of cognates that made Standard US and Glasgow more similar to each other than to RP contained postvocalic /r/. McMahon et al. (2007: 137) hence concluded that clearly the major split is the well-known division between rhotic and nonrhotic varieties of English. Likewise, Maguire et al. (2010) found the presence or absence of postvocalic /r/ to account for main divisions between varieties of English spoken in the British Isles, and a frequency-based investigation of data from the *Handbook* (Schneider et al. 2004) revealed that both rhoticity and non-rhoticity were (highly) diagnostic features of a number of different types of World Englishes (Schneider 2005, reported in Schneider 2007: 74-77).

The dichotomy between /r/-ful and /r/-less varieties of English around the world is related to the chronology of the loss of rhoticity in England (referred to as *R Dropping* by Wells 1982: 218). While, originally, rhoticity was found in all English dialects, the loss of postvocalic /r/ seems to have begun in the southeast of England, especially London, the South Midlands and East Anglia, and to have spread subsequently to other parts of the country (Trudgill 1999: 53). The change from /r/ to  $\emptyset$  was a long process. Sporadic loss of



/r/ without lengthening, which resulted in modern forms such as *ass* → *arse* and *cuss* → *curse* and *bust* → *burst* is found as early as 1300 (Wells 1982; Lass 1999; Barber et al. 2009). According to Lass (1999: 114-115), the main phase of the change began in the fifteenth century. Initially, /r/-loss remained restricted to occasional manifestations such as *cadenall* → *cardinal* and *monyng* → *morning*. In the seventeenth century, postvocalic /r/ developed weakened allophones but generally continued to be articulated until the late seventeenth and early eighteenth centuries. The change only really caught on in the course of the eighteenth century, when coda /r/ was increasingly deleted, and by the 1790s R Dropping had spread widely in the southeast. Non-rhoticity seems to have been established in the standard by the early twentieth century, as evidenced by the absence of postvocalic /r/ from Jones (1909) description of English pronunciation, based on the speech of educated people in London and the neighbourhood (Ihalainen 1994: 215). The change subsequently spread throughout England and is still ongoing today, with the remaining traditionally rhotic areas continually shrinking and rhoticity now being generally considered to be on the verge of extinction (see e.g. Trudgill 1999).

The interplay between the chronology of R Dropping in England and the date of arrival of British settlers in the colonies is one of the reasons why non-rhoticity reached some world regions, while others remained rhotic. As Sharbawi & Deterding (2010: 123) note, 'when English was exported to colonial areas before or during the early 18th century, the resulting variety was a rhotic one .... In contrast, when the export of English occurred after the mid-18th century, the variety was more likely to be a non-rhotic one.' Schreier (2012) similarly argues that, while /r/-loss was too sporadic in the mother colony to be adopted in colonies which were established before the 1750s, the change had spread widely enough in southeastern England to be picked up in colonies settled after that period. The history of /r/-deletion in England and the timing of colonisation interacted with a range of other factors to determine patterns of occurrence of postvocalic /r/ around the world. These include the region of origins of the settlers and the colony's relationship with England, language and dialect contact, mother tongue influence, as well as general SLA and incomplete accommodation processes (see e.g. Wolfram & Schilling-Estes 1998; Schreier 2008, 2012; Sharbawi & Deterding 2010).

The complexity of these influences means that, even though the division between rhotic and non-rhotic dialects is a key criterion in the classification of World Englishes, there are many varieties which do not neatly fit into this dichotomy. A case in point are

intermediate or ̃semi-rhotic̃ varieties such as Jamaican English, in which non-prevocalic /r/ tends to be pronounced before a pause but not before a consonant (Wells 1982; see also Rosenfelder 2009). Furthermore, over the last 45 years quantitative studies from around the globe have demonstrated that many dialects conventionally labelled as rhotic or non-rhotic are actually variably rhotic. A comprehensive review of this work is beyond the scope of this chapter, but the following examples illustrate the range of varieties covered: English English (Foulkes 1997; Asprey 2007; Barras 2010; Piercy & Britain 2011); Scottish English (Romaine 1978; Stuart-Smith 2007; Lawson et al. 2011; Llamas 2010); New York City English (Labov 2006, 1972b; Becker 2009); Eastern New England English (Nagy & Irwin 2010); southern US English (Feagin 1990); African American English (Labov 1972a; Myhill 1988; Edwards 1992); North American English (Labov et al. 2006); New Zealand English (Gordon et al. 2004; Hay & Sudbury 2005); Brunei English (Sharbawi & Deterding 2010), and Indian English (see section 4.1.3.1). This research has shown that in many of these varieties, postvocalic /r/ is undergoing change (either from rhoticity to non-rhoticity or from non-rhoticity to rhoticity) and that, far from being random, variation in the use of this variable correlates with a number of linguistic and social factors. Some of these constraints are discussed in connection with Indian English in section 4.1.3.1.

#### **4.1.2 Word-final /r/ before vowels: linking /r/ and intrusive /r/**

In most non-rhotic varieties of English, the loss of postvocalic /r/ led to an alternation in the pronunciation of lexical items historically ending in /r/. When words such as *fear* occur in utterance-final position (*fear* ||), or when they are followed by a word or morpheme beginning with a consonant (*fear death, fears*), /r/ does not appear (/fɪə ||; fɪə dɛθ; fɪəz/); when they are, however, followed by a word or morpheme beginning with a vowel (*fear anything, fearing*), /r/ is articulated, yielding /fɪə ʌnɪθɪŋ; fɪəɪŋ/ (Wells 1982: 219). This phenomenon is commonly known as ̃linking /r/̃ (see also Trudgill 1999; Hughes et al. 2005; Lass 2006). Following Hay & Sudbury (2005: 799-800), I refer to cases such as *fear anything* or *far away*, where a word-final etymological /r/ occurs before a vowel-initial word, as ̃word-final linking /r/̃, while using the term ̃word-internal linking /r/̃ for derived forms such as *fearing, poorer, dollarisation*, in which /r/ appears before a vowel-initial suffix.

Many non-rhotic English accents also exhibit a related feature called *intrusive /r/*. In these varieties, the pattern of /r/-Ø alternation described above is extended, by analogy, to lexical items without historical word-final /r/ (Wells 1982: 223-227; Trudgill 1999: 57-58; Hughes et al. 2005: 64-65). An unetymological /r/ can thus be pronounced in phrases such as *the idea isn't* /ði: aɪdɪə ɪznt/ or *I saw it* /aɪ sɔ:ɪt/. Intrusive /r/ occurs in the same phonetic contexts as linking /r/, applying only to words ending in one of the non-high vowels /ə, ɜ:, ʌ:, ɔ:/ when followed by another vowel. Like linking /r/, it can appear both across word boundaries, as in the examples above (*word-final intrusive /r/*), and across morpheme boundaries, in derived forms such as *drawing* /dɹɔ:ɪŋ/ or *Kafkaesque* /kæfkəːsk/ (*word-internal intrusive /r/*).

For these reasons, from a synchronic point of view, linking /r/ and intrusive /r/ are often regarded as manifestations of the same mechanism, employed in non-rhotic varieties of English to resolve vowel hiatus (Wells 1982; Trudgill 1999; Britain & Fox 2009). Wells (1982: 226) subsumes both phenomena under a rule termed *ØR Insertion*, which inserts /r/ after non-high vowels when they are followed by a morpheme or word beginning with another vowel. He accounts for linking /r/ and intrusive /r/ by arguing that the original R Dropping rule was inverted in the course of time: while initially speakers had deleted non-prevocalic /r/ from underlying forms containing /r/, after the loss of rhoticity was established, a change in the underlying forms took place, so that they contained no postvocalic /r/ anymore and speakers began to insert word-final /r/ in prevocalic environments. This is one of the most frequently held positions in theoretical debates about English /r/-sandhi phenomena (see e.g. the discussions in Foulkes 1997; Hay & Sudbury 2005; Barras 2010).

While an overt phonetic realisation of /r/ in linking /r/ contexts is permitted in both rhotic and non-rhotic dialects (even though it may surface via different processes),<sup>1</sup> intrusive /r/ is generally believed to be characteristic of non-rhotic varieties only. As Trudgill (1999: 58) points out, *ØR-ful* accents do not have this feature, because they have not undergone the loss of *-r* which started the whole process off in the first place.<sup>2</sup> A

<sup>1</sup> Note that, strictly speaking, the label *linking /r/* may not be appropriate for an overt phonetic realisation of /r/ produced by a rhotic speaker in word-final, prevocalic contexts, since the term usually refers to a phenomenon characteristic of non-rhotic English dialects. For the sake of simplicity, however, I follow Barras (2010: 102) in using this term to generally refer to the occurrence of postvocalic /r/ in this environment, no matter whether the speaker is rhotic or non-rhotic.

<sup>2</sup> Recent investigations into English r-sandhi phenomena have shown, however, that some speakers do display (variable) rhoticity and intrusive /r/ at the same time (Hay & Sudbury 2005; Barras 2010).

survey by Hay & Sudbury (2005) shows that linking /r/ has been reported for most non-rhotic native varieties of English and that those which have linking /r/ usually display intrusive /r/ as well. The two phenomena seem, however, to be less frequent in non-rhotic second-language and other contact-induced dialects of English. Thus, Mesthrie (2004c: 1108) observes that linking /r/ is found neither in Ghanaian English, Cameroon English nor Liberian Settler English, and that it is rare to non-existent in varieties of South African English, whereas Schneider (2004: 1125) notes that intrusive /r/ has been variably reported for the Caribbean but that it occurs hardly at all in Africa and Asia. Quantitative work on English r-sandhi has revealed that both linking /r/ and intrusive /r/ are variable and complex phenomena which, like the occurrence of postvocalic /r/ in prepausal and preconsonantal position, are constrained by a range of internal and external factors (see, in particular, Foulkes 1997; Hay & Sudbury 2005; Barras 2010).

### **4.1.3 Postvocalic /r/ in the input varieties**

#### **4.1.3.1 Indian English**

A survey of qualitative descriptions of Indian English reveals a continuum from non-rhotic to rhotic varieties. Some groups of speakers, particularly those at the top of the social scale, have been described as lacking postvocalic /r/. According to Bansal (1990: 222), these include radio and television newsreaders, sports commentators and advertisers, teachers of English trained in the phonetics of English, and others who have been influenced by British RP. Pingali (2009: 18) likewise describes a variety of Indian English that is acquired in elite schools and is close to but does not precisely match All India Radio newsreaders' speech (which, in turn, is modeled on RP). This type of accent, which she refers to as 'Standard Indian English Pronunciation' (SIEP), lacks non-prevocalic /r/ (Pingali 2009: 19).<sup>3</sup>

Both authors point out, however, that even if this non-rhotic variety is regarded as prestigious in India, it is only used by a small minority of the population. Bansal (1990: 222) reports that other educated speakers generally have what may be called a RHOTIC

---

<sup>3</sup> Note that Pingali (2009) uses the term 'standard' in a very narrow sense, so that the educated variety of Indian English described by other authors would presumably fall under her definition of 'non-standard' varieties.

accent.ö This view seems to be endorsed by most qualitative descriptions of Indian English (which usually focus on educated forms of the variety):

Most speakers have a more or less fully rhotic pronunciation, pronouncing /r/ in all cases where there is *r* in the spelling (Wells 1982: 629).

Despite the long-standing influence of Received Pronunciation and other generally non-rhotic British accents, English in India is almost universally rhotic: that is, *r* is pronounced in all positions (McArthur 2003: 321).

The liquid /r/ is generally trilled (í ). This is true of postvocalic /r/ as well: e.g., [ka:r] and [ka:r̥] for *car* and *cart* respectively (Gargesh 2004: 998).

The rhotic varieties in Africa-Asia are Ind Eng [Indian English], Pak Eng [Pakistani English] and Phl Eng [Philippine English] (Mesthrie & Bhatt 2008: 128).

EIE [Educated Indian English] is a rhotic accent, that is to say ɾ is pronounced wherever it occurs, unlike BRP [British Received Pronunciation] where post-vocalic ɾ is not pronounced (Nihalani et al. 2004: 209).<sup>4</sup>

CIEFL (1972: 7), an often-cited early treatment of Indian English phonology, does not comment explicitly on rhoticity but does argue that in the Indian English vowel inventory, several categories are maintained and others are split into two through the pronunciation of /r/ after a vowel.ö Although sequences of vowel plus /r/ are invariably given as separate phonemic categories (e.g. *father* /a: > ɑ:/ vs. *farther, bard* /ar > ɑr/), this source appears to allow some room for variation in that it lists retroflex and retracted central vowels among the phonetic realisations of postvocalic /r/ (cf. below). Variation also emerges from a similar statement by Nihalani et al. (2004: 206): öWe need not acquire all the BRP vowel distinctions because *many* Indians pronounce the post-vocalic ɾ [emphasis added].ö This implies that some do not, and similar qualifications (ögenerallyö, öMost speakersö, ömore or lessö, öalmostö) in the reports quoted above suggest that in Indian English, the occurrence of coda /r/ varies across individual speakers, and possibly across different situations for the same speaker.<sup>5</sup> Bansal (1978) analysis of the speech of ten educated

<sup>4</sup> Trudgill & Hannah (1994: 128), on the other hand, observe that ö[t]he English of most educated Indians is non-rhotic.ö This could refer to the non-rhotic minority variety described by Bansal (1990) and Pingali (2009).

<sup>5</sup> This variability is likely to have originated from a combination of opposing influences (Gargesh 2004; Pingali 2009). On the one hand, non-rhotic RP has enjoyed prestige in India and been commonly used as an (unattainable) pedagogical model in schools since colonial times (see e.g. Pingali 2009: 17 and the discussion in Nihalani et al. 2004). On the other hand, many of the input varieties brought by the colonists were probably

speakers from different parts of the country indeed revealed that half of them pronounced postvocalic /r/, while the other half did not, and Maxwell & Fletcher (2009) note that their informants from northern India were either fully or variably rhotic. As discussed in sections 4.1.3.1.1 and 4.1.3.1.2, variable rhoticity is not only widely attested in quantitative work on Indian English, both on the subcontinent (Sahgal & Agnihotri 1988; Wiltshire 2005; Wiltshire & Harnsberger 2006; Chand 2010) and in the diaspora (Sharma 2005a; Hirson & Sohail 2007), but has also been shown to correlate with a number of linguistic and social factors. The most notable exception in this regard seems to be South African Indian English, which is non-rhotic (Mesthrie 1992, 2004b).

Very little information seems to be available on the occurrence of linking /r/ and intrusive /r/ in Indian English. According to Pingali (2009: 20), (non-rhotic) Standard Indian English Pronunciation displays linking /r/ but not intrusive /r/. Since her definition of SIEP is restricted to a type of accent characteristic of few speakers only, it is not clear whether this pattern is also found among the great majority of Indians using other forms of Indian English. Considering that Indian English in general tends to be variably rhotic and that intrusive /r/ is hardly ever found in Africa and Asia (Schneider 2004), one might generally expect this variety to display variable occurrence of linking /r/ while lacking intrusive /r/, though this needs, of course, empirical confirmation. In South African Indian English, on the other hand, both linking /r/ and intrusive /r/ are rare (Mesthrie 2004b).

Phonetically, Indian English /r/ is described mostly as a tap or trill, although approximants are also mentioned in the literature. CIEFL (1972: 7) states that after vowels,  $\tilde{r}$  may vary from a strong trill (quite rare) through a flap and a fricative to a retroflex or retracted central vowel. Wells (1982: 629) defines it as  $\tilde{r}$  a post-alveolar fricative or approximant, [ɹ], or else an alveolar tap or trill, [r ~ r̥]; Trudgill & Hannah (1994: 128) as  $\tilde{r}$  a flap [ɾ] or even a retroflex flap [ɽ]; and Gargesh (2004: 998) as  $\tilde{r}$  generally trilled. Bansal (1976) reports that /r/ is an approximant or flap, Singh (2004) that it is a tap or trill (both quoted in Wiltshire & Harnsberger 2006: 92), and Sharma (2005a: 209) refers to it as a  $\tilde{r}$  partially devoiced, trilled /r̥/. In South African Indian English, prevocalic /r/ variably appears as an approximant or rolled [r] (Mesthrie 2004b). Furthermore, quantitative investigations of the phonetic realisation of (postvocalic) /r/ in Indian English have revealed variation constrained by linguistic and social factors, both in India itself (Wiltshire 2005;

---

rhotic or at least variably rhotic, due to 1) the early date of transplantation of English to the country; and 2) the regions of origins of the settlers, which included not only England but also Ireland and Scotland. To this, one may add the influence of spelling pronunciation and transfer from Indian languages.

Wiltshire & Harnsberger 2006; Chand 2010) and in diasporic communities (Sharma 2005a; Hirson & Sohail 2007; McCarthy et al. 2011; see section 4.1.3.1.2).

In the following, I provide a survey of the main sources of influence which have been found to affect the occurrence of postvocalic /r/ and the phonetic realisation of rhotic consonants in varieties of Indian English on the subcontinent and elsewhere. Most of these factors have been extensively studied in sociolinguistic research on coda /r/ in native English dialects, while a few are more specific to second-language and contact-induced varieties. First, I briefly deal with linguistic constraints (section 4.1.3.1.1) and then discuss social and stylistic constraints (section 4.1.3.1.2).

#### **4.1.3.1.1 Linguistic constraints**

A wide range of linguistic constraints have been examined in variationist sociolinguistic work on postvocalic /r/, including preceding and following phonological environment, syllable stress, morphological position, the presence of another /r/ in the same lexical item, the distinction between content and function words, lexical frequency and word length (cf. the studies cited in section 4.1.1). Research on Indian English coda /r/ has generally focused on social and stylistic factors, but one study that did consider linguistic constraints is Chand (2010), an apparent-time investigation of /r/-deletion across three generations of upper middle class Indian English speakers in New Delhi. Chand looked at phonetic environment (coded as a combination of preceding vowel and following segment; see below), syllable stress and morphemic independence. All three predictors were found to significantly affect the occurrence of postvocalic /r/ among Delhi Indian English speakers, although syllable stress and morphemic independence ranked below phonetic environment and all the social factors examined. In the rest of this section, I focus on following phonological environment, since this is the only linguistic constraint included in the present study.

The influence of following phonological environment (sometimes combined with the morphological position of coda /r/) has been widely explored in quantitative work on postvocalic /r/. Comparisons across studies are somewhat difficult to make due to the different categorisation systems employed, ranging from Labov's (1972b, 2006) early distinction between preconsonantal and prepausal environments to the fine-grained classifications of more recent investigations (e.g. Gordon et al. 2004; Nagy & Irwin 2010; Chand 2010; Piercy & Britain 2011). A common finding has been, however, that

postvocalic /r/ is pronounced more frequently in prepausal than preconsonantal position (Labov 1972b, 2006; Myhill 1988; Nagy & Irwin 2010; Barras 2010; Piercy & Britain 2011). Moreover, in analyses including word-final prevocalic (linking /r/) contexts, this environment often resulted in favouring rhotic realisations the most (Labov 1972a; Becker 2009; Nagy & Irwin 2010; but cf. Myhill 1988 on a more complex pattern in African American English). Chand (2010: 21) reports the following constraint hierarchy for her Delhi Indian English speakers (ranging from the context most favouring the deletion of postvocalic /r/ to the one least favouring it): ðPre-consonantal, schwa or full-vowel nucleusö (*bird, fourth*); ðWord- or syllable-final, schwa nucleusö (*her, mur.der.er*); ðWord-final, full-vowel nucleusö (*beer*); ðSyllable-final, full-vowel nucleusö (*sur.pri.sing*). Because preconsonantal and linking /r/ tokens were conflated in this study (Chand 2010: 17), it is difficult to assess the extent to which this pattern parallels those identified in other studies on coda /r/.

#### 4.1.3.1.2 Social and stylistic constraints

Since Labov's (1972b, 2006) landmark New York City study, sociolinguistic research has demonstrated time and again clear links between patterns of occurrence of postvocalic /r/ and social factors such as socioeconomic class (as well as related predictors like education level or linguistic marketplace), age and gender.<sup>6</sup> These factors, often examined in combination with stylistic variation, have also provided solid evidence for changes in progress (cf. Labov 1972a, 1972b, 2006; Romaine 1978; Feagin 1990; Gordon et al. 2004; Hay & Sudbury 2005; Stuart-Smith 2007; Becker 2009; Nagy & Irwin 2010; Barras 2010; Lawson et al. 2011; Piercy & Britain 2011).

Indian English is no exception to this. Sahgal & Agnihotri's (1988) early sociolinguistic investigation examined the use of this variable (and other Indian English phonological features) among educated speakers from south Delhi (see also Agnihotri & Sahgal 1985; Agnihotri 1994). The authors found that among their Delhi speakers, the use of non-prevocalic /r/ correlated with the type of schooling informants had gone through, as well as age and gender. Speakers who had gone through (some) English-medium education (particularly those who had attended prestigious English-medium schools), young speakers and females used more non-rhotic variants than speakers from vernacular-medium schools,

---

<sup>6</sup> With regard to gender, this has, however, been challenged by e.g. Eckert & McConnell-Ginet (1992).



old informants and males. Furthermore, coda /r/ showed a clear stylistic stratification in that zero realisations occurred more frequently in reading style than in casual style. Sahgal & Agnihotri (1988: 62) therefore concluded that non-rhotic variants were the prestige form among their informants and that the age and gender patterns were 'suggestive of a language change in progress', with Indian English possibly moving towards /r/-lessness.

Two decades later, Chand (2010) reported that gender was the predictor most strongly affecting the occurrence of postvocalic /r/ among her participants in Delhi, followed by phonetic environment and various other social factors: 'Female, working age, transient, self-identified Delhiites are the least rhotic, overall, while the most rhotic group is male, retired, Hindi Belt permanent Delhiites' (Chand 2010: 27).<sup>7</sup> These intergroup differences, combined with the finding that all groups deleted /r/ more frequently in more formal styles, led the author to argue, like Sahgal & Agnihotri (1988), that non-rhoticity is the prestige form in Delhi Indian English.<sup>8</sup> Whereas Sahgal & Agnihotri (1988) informants had shown an increase in /r/-deletion in apparent time, though, her data revealed a peak of non-rhoticity in the working age generation, followed by an increase in the use of rhotic variants by the youngest group – a pattern Chand (2010: 31-33) considered to be related to the changes in the media, education and ideology that characterised India's colonial and postcolonial history.

Another type of influence on variation in the use of postvocalic /r/ which has been investigated in a number of studies, including work on Indian English in diasporic contexts, are factors such as ethnicity, the degree of integration into the community, as well as (ethnic) identity and attitudes (for other varieties see e.g. Labov 1972b, 2006; Myhill 1988; Edwards 1992; Nagy & Irwin 2010; Llamas 2010). Sharma's (2005a) investigation of Indian English in the San Francisco Bay area found first-generation migrants to vary between null realisations, trills and approximants. As already noted in section 2.2, the frequency of different variants of postvocalic /r/ and other phonological features depended much more on participants' attitudes towards their host community and American culture than on their proficiency level, suggesting that the features' use was linked to the expression of different types of identity (Sharma 2005a: 215-220). Likewise, Hirson &

---

<sup>7</sup> Socio-economic class was not included as a factor in the analysis because the speaker sample was relatively homogeneous in this respect (Chand 2010: 10).

<sup>8</sup> Because male speakers as well as transient Delhi residents were more likely to use trills and there were no differences relating to the formality of context for this variant, however, Chand (2010: 35) also suggests that trills may 'hold covert prestige within Delhi IndE'.

Sohail (2007) reported a correlation between variation in the pronunciation of /r/ and differential group affiliation for second-generation Punjabi-English bilinguals in London. Subjects who self-identified as Asian all displayed rhotic accents and a wide range of phonetic realisations of /r/ (including post-alveolar approximants [ɹ], retroflex approximants [ɻ], retroflex taps [ɽ], labiodental taps [ɸ], alveolar taps [ɾ] and alveolar trills [r]). In contrast, those who self-identified as British Asian tended to exhibit non-rhotic accents and (prevocally) less variation in the phonetic realisation of /r/, indicating greater accommodation to the local southeastern British English accent.

Finally, patterns of occurrence of coda /r/ and the phonetic realisation of rhotic consonants have also been shown to depend on constraints which are more specific to second-language and other contact-induced varieties. For example, in varieties like Indian English and Brunei English (cf. Sharbawi & Deterding 2010), a factor such as regional or ethnic background is closely related to mother tongue or first language influence.<sup>9</sup> While regional-linguistic background was not included as an independent variable in Sahgal & Agnihotri (1988) and Sharma's (2005a) studies, Chand (2010: 22) found her speakers' ethno-linguistic alignment to significantly influence their production of postvocalic /r/: Delhiites are the least rhotic (.69), followed by mixed backgrounds (.59), then Bengalis (.57), finishing with the Hindi Belt [speakers from the Punjab and UP/Haryana] as the most rhotic (.46).

Considerable differences have been reported for other regional-linguistic groups. For instance, Tibeto-Burman L1 speakers of Indian English displayed a clear tendency towards rhoticity, with percentage scores of rhotic tokens ranging from 83% to 91%; furthermore, they showed an overwhelming preference for approximant [ɹ], with taps [ɾ] being rare (Wiltshire 2005). In contrast, speakers from Gujarati and Tamil L1 backgrounds were found to pronounce postvocalic /r/ much less frequently, with average rhoticity levels of 17% and 15%, respectively; moreover, while Tamil English speakers used approximants more often than taps, Gujarati English speakers tended to use taps the most, followed by trills and approximants (Wiltshire & Harnsberger 2006). These findings are especially relevant to the present study, as the majority of East African Indians in Leicester (and, indeed, most participants of the study) come from a Gujarati background (see chapter 3 and section 5.1). In the London Bangladeshi community, late first-generation migrants from a

---

<sup>9</sup> Other factors commonly investigated in studies of second-language varieties are, for instance, language proficiency and, in diasporic contexts, length of residence. Sharma (2005a) found both of them to be less clear predictors of patterns of postvocalic /r/ than speakers' attitudes to American culture.

Sylheti L1 background were shown to use a variety of retracted tapped, trilled and approximant variants of prevocalic /r/; this contrasted sharply with the use of non-retracted approximant realisations by second-generation migrants (McCarthy et al. 2011; cf. section 2.1.2).

#### **4.1.3.2 East African English**

The scanty literature on East African English indicates that the varieties of English spoken in Kenya, Uganda and Tanzania are characterised by a general lack of postvocalic /r/. Schmied (2004: 926-27; 2006: 193) describes East African English as 'non-rhotic', with /r/ being 'usually only pronounced prevocally'; Mesthrie & Bhatt (2008) do not include East African English in their list of rhotic varieties of English in Africa and Asia; and Simo Bobda (2001: 277-78) notes that 'current literature' generally identifies African English as non-rhotic. The statement (which probably does not take into account Sudan and Somalia) is valid, indeed, for most west, southern and east African Englishes. According to Simo Bobda (2001: 278), the Englishes of Sudan and Somalia are in fact the only rhotic varieties of English in Africa. For Kenya, absence of coda /r/ is also reported by Hoffmann (2010; 2011), who found both White and Black Kenyan English speakers to be non-rhotic.

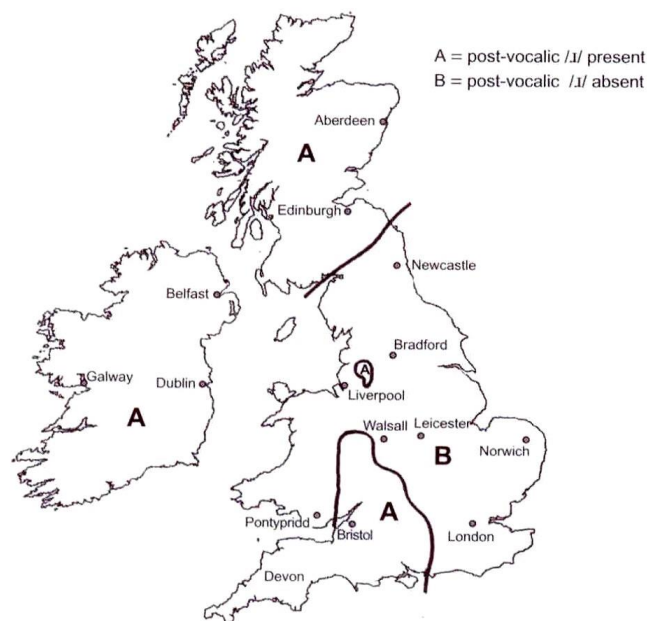
Hardly anything appears to be known on patterns of occurrence of linking /r/ and intrusive /r/ in East African English. Schmied (2004; 2006) does not state explicitly whether his observation that /r/ is pronounced (only) in prevocalic position also applies to cases where word-final /r/ is followed by a vowel. Mesthrie (2004c: 1108) notes that linking /r/ is not found in Ghanaian, Cameroon and Liberian Settler English but does not mention East African English in this context. Lastly, as indicated earlier, Schneider (2004: 1125) asserts that intrusive /r/ scarcely occurs in Africa and Asia; one might therefore expect it to be absent from East African English.

In prevocalic position, several phonetic realisations of /r/ are reported in the literature. Schmied (2004; 2006) remarks that in East African English, there is variation between rolled and flapped forms of /r/. According to Simo Bobda (2001: 278), /r/ is typically pronounced as an alveolar trill in southern Africa, as well as Sudan and Somalia; in other countries on the axis from southern to north-eastern Africa, including Tanzania, Uganda and Kenya, 'there is fluctuation between the alveolar trill and the post-alveolar

[approximant] /r/. Interestingly, Simo Bobda (2003: 33) proposes Asian influence as one of the possible sources of trilled /r/ in southern and eastern Africa.

#### 4.1.3.3 East Midlands English

As in most other dialects of England (see section 4.1.1), postvocalic /r/ was lost in East Midlands English (see e.g. Trudgill 1999; Hughes et al. 2005; Upton 2004b). Map 4.1 (from Hughes et al. 2005: 64) shows that rhoticity is clearly absent from the contemporary Leicester accent and, more generally, East Midlands English. With regard to this feature, the East Midlands therefore pattern with neighbouring northern dialect areas such as the Northwest Midlands and West Midlands, which are all reported to be non-rhotic (cf. Docherty & Foulkes 1999 on Derby; Mathisen 1999 on Sandwell; and Clark 2004 on the West Midlands generally).



Map 4.1 Present-day distribution of postvocalic /r/ in the British Isles (from Hughes et al. 2005: 64).

To my knowledge, there are no descriptions of the occurrence of linking /r/ and intrusive /r/ in East Midlands English. Given that *r*-insertion is one of the most productive phonological rules in contemporary English (Wells 1982: 227) and that the presence of both linking /r/ and intrusive /r/ is widely attested in non-rhotic British English

dialects, including the north (see e.g. Foulkes 1997 and Docherty & Foulkes 1999 on Derby; Mathisen 1999 on Sandwell; Foulkes 1997 and Watt & Milroy 1999 on Newcastle; and Barras 2010 on East Lancashire), it seems very likely that the production of both etymological and unetymological word-final /r/ before vowels is permitted in East Midlands English as well.

For prevocalic /r/, different phonetic variants are found in northern English dialects. As in southeastern English varieties, post-alveolar approximants [ɹ] are the predominant form, but alveolar taps [ɾ] also occur (Wells 1982; Hughes et al. 2005).<sup>10</sup> Wells (1982: 368) suggests that taps are more likely to appear after labial or dental consonants (*pray, three*) and between vowels (*very, pair of shoes*). These tendencies have been confirmed for a number of northern accents in the vicinity of Leicester: in Derby, /r/ is generally produced as [ɹ], with sporadic occurrences of intervocalic [ɾ] among older speakers (Docherty & Foulkes 1999); in Sandwell, the usual realisation is also [ɹ], but [ɾ] sometimes surfaces before vowels (Mathisen 1999); and the use of taps is also reported for Birmingham, mainly in disyllabic words (*marry, very*) but also in monosyllabic words (*bright, great*) (Chinn & Thorne 2001, quoted in Clark 2004: 159). Lastly, a variant of /r/ which used to be highly stigmatised but has recently been gaining a lot of ground among younger speakers in England is the labiodental approximant [ʋ] (Docherty 2010). Its spread is attested in northern localities such as Middlesbrough (Llamas 2001), as well as Newcastle and, closer to Leicester, Derby (Foulkes & Docherty 2001).

#### 4.1.4 Postvocalic /r/: summary

A survey of qualitative and (for Indian English) quantitative work on the three input varieties has revealed that, whereas Indian English is variably rhotic, both East African English and East Midlands English are non-rhotic. As in many other English dialects around the world, variability in the occurrence of postvocalic /r/ in Indian English has been shown to be influenced by a number of linguistic and social constraints. Not much is known about linking /r/ and intrusive /r/ in the input varieties but, based on the scanty evidence available, it seems reasonable to assume that Indian English may display variable use of

---

<sup>10</sup> Other, less frequent northern English variants of /r/ are the so-called ‘Northumbrian burr’ a uvular fricative [ʁ] which used to be characteristic of the traditional dialects of Northumberland and northern Durham but has nowadays become rare (Wells 1982; Beal 2004), and the alveolar trill [r], which is reported to occur in many accents around Scotland (Hughes et al. 2005: 65-66).

linking /r/ but no intrusive /r/, while both phenomena may appear in non-rhotic East Midlands English. The case is less clear for linking /r/ and intrusive /r/ in East African English. All three input varieties exhibit variation in the phonetic realisation of rhotic consonants. Depending on various factors, taps, trills or approximants may occur in Indian English; note, however, the Gujarati English preference for taps and trills (Wiltshire & Harnsberger 2006), which is of particular relevance to this study. Alternation between taps, trills and approximants is also reported for East African English and finally, post-alveolar approximants are likely to be the most widespread variant in East Midlands English, though taps and, possibly, labiodental approximants may be found in this area of England as well.

## 4.2 The vowels: FOOT, STRUT and NURSE

### 4.2.1 FOOT

Following Wells (1982: 132-33), [t]he standard lexical set FOOT is defined as comprising those words whose citation form in RP and GenAm [General American] has the stressed vowel /ʊ/ö, which is öa relatively short, lax, fairly back and fairly close vocoid [ʊ], usually weakly roundedö (e.g. *put*, *butcher*, *good*, *look*, *wolf*). Historically, the FOOT class derives from two distinct sources, Middle English short /u/ and shortened Middle English /o:/ (Wells 1982; Lass 1999, 2006; Harris 1996). The majority of words belonging to this set stem from Middle English short /u/ (*full*, *put*). Phonetically, this vowel moved from the peripheral quality it had in Old English, which was identical to that of its long counterpart /u:/ (*pull* vs. *pool*), to a centralised and lowered quality [ʊ], a change which was established towards the end of the 17<sup>th</sup> century (Lass 1999). The FOOT class was further enlarged by lexical items deriving from the second source, Middle English /o:/ (*foot*, *good*), which underwent sporadic shortening to /u/ after it was raised to /u:/ during the Great Vowel Shift (Harris 1996).<sup>11</sup>

Surveys of phonological variation across contemporary Englishes in the British Isles and elsewhere reveal that, compared to STRUT and NURSE, FOOT varies relatively little across dialects (Wells 1982; Upton 2004b; Schneider 2004; Schneider 2007; Mesthrie & Bhatt 2008). One of the main cross-dialectal differences is that some varieties (Scottish and

---

<sup>11</sup> Note that, since the lexical incidence of this change varied across dialects in England, some FOOT words, particularly those in which FOOT precedes /k/ (*book*, *cook*, *took*), tend to exhibit a long vowel /u:/ in northern English accents (Wells 1982; Harris 1996).

Ulster English, as well as many second-language and other contact-induced Englishes spoken in Africa, Southeast Asia and the Pacific) have merged FOOT with GOOSE, whereas others (including South African Indian English and Englishes spoken in South Asia) maintain a phonemic distinction between these two vowels. Generally speaking, in accents with no FOOT-GOOSE distinction the merged vowel tends to be pronounced as a tense (fronted, central, or back) [u], while a (weakly) rounded [ʊ] is the predominant realisation in dialects that have both phonemes. Schneider (2004: 1116) describes [ʊ] as 'the default variant in most varieties all around the globe' and argues elsewhere that the FOOT-GOOSE merger and [u]-realisations of FOOT primarily arise through language contact (2007: 74).

In present-day British English, however, the phonetic quality of FOOT has been changing, with the vowel being fronted and unrounded in many dialects (Docherty 2010). Thirty years ago, Wells (1982: 133) drew attention to this development by suggesting that 'a more peripheral and rounded variety [of FOOT] is perhaps generally associated with old-fashioned or rural speech in England, Wales, and Ireland, and more centralized and/or unrounded varieties with innovative or urban speech.' Variants of FOOT such as [ʊ] and [y] are already attested in the *SED* for the southwest of England (Wakelin 1972) and, more recently, quantitative studies have reported fronting and/or unrounding of this vowel for a number of other dialects, including RP (Hawkins & Midgley 2005; Fabricius 2007b; Ferragne & Pellegrino 2010), as well as varieties spoken in East Anglia (Ferragne & Pellegrino 2010) and the southeast of England (Torgersen & Kerswill 2004; Torgersen et al. 2006).

#### 4.2.2 STRUT

Adopting again Wells (1982: 131-2) definition, the standard lexical set STRUT consists of 'those words whose citation form in RP and GenAm has the stressed vowel /ʌ/, which he describes as 'a relatively short, half-open or slightly opener, centralized-back or central, unrounded vocoid' (e.g. *cut, study, come, love, blood*). Note that, as this definition suggests, the quality of /ʌ/ in the two reference accents differs from that of IPA /ʌ/, which is a back vowel. STRUT was indeed already classified as a central vowel (together with NURSE and schwa) in Jones' third edition of *An Outline of English Phonetics* (1932; in Fabricius 2007a: 296) and Lass (1999: 90) also points out that, used as a label for the

English STRUT set, the symbol /ʌ/ comprises a rather vague range of opener centralised-to-central vowel qualities.

STRUT is a relatively young vowel whose history is closely related to that of FOOT. The two vowels stem from the same Middle English sources, short /u/ and shortened /o:/ (cf. above), but developed into different phonemes in the Early Modern English period through a change known as the FOOT-STRUT split, in which short /u/ was unrounded and lowered in certain lexical items (Wells 1982; Harris 1996; Lass 1999, 2006; Barber et al. 2009). This development, which began in the south of England, is first mentioned in the late 16<sup>th</sup> century and commonly reported by the 1640s (Chambers & Trudgill 1998; Lass 1999).<sup>12</sup> Its initial phase was characterised by considerable variation, with a number of words displaying both the old and the new vowel in historical records (Harris 1996; Lass 1999). Harris (1996: 26) reports that several sources from the second half of the 17<sup>th</sup> century equate the vowel with the merged reflex of Middle English *e/i/u* before *r* (as in **fern**, **bird**, **burn** and unstressed in the second syllable of **winter**) and argues that several variants of STRUT were found in 17<sup>th</sup>-century English: fully central *ə*, relatively back unrounded *ʌ* and rounded *ɔ*. According to Lass (1999: 89-90), the new vowel, which was still fairly close around 1650, became quite open towards the end of the 17<sup>th</sup> century. The process of lowering continued in the following century, as evidenced by the fact that by the late 18<sup>th</sup> century we find English **u**-spellings of fully open *a*-sounds in words borrowed from various Indian subcontinent languages, e.g. **bungalow**, **pundit** (Ekwall 1975: 51, in Harris 1996: 26).

The process of unrounding and lowering of Middle English short /u/ interacted with the shortening of Middle English /o:/. According to the most common account (see e.g. Wells 1982; Lass 1999; Barber et al. 2009), when words with Middle English /o:/ underwent shortening before the 17<sup>th</sup> century, they were generally unrounded and lowered with the short /u/ class, so that they tend to have /ʌ/ in present-day (southern) English (*blood*, *flood*, *love*). Later shortenings, however, were not affected by the change and merged with the unrounded and unlowered short /u/ items, resulting in the modern FOOT set

---

<sup>12</sup> The change probably originated as allophonic variation, with short /u/ being affected in most phonetic contexts except when preceded by a labial consonant, as in *cut*, *run*, *suck* vs. *put*, *bush*, *full* (Wells 1982; Harris 1996). There are, however, many exceptions to this tendency, so that, as Chambers & Trudgill (1998: 106) point out, the occurrence of either variant, [u] or [ʌ], is not predictable anywhere today.



(*good, foot*; see section 4.2.1). The historical development of Middle English short /u/ and long /o:/ is illustrated in Figure 4.2 (from Lass 1999: 90).<sup>13</sup>

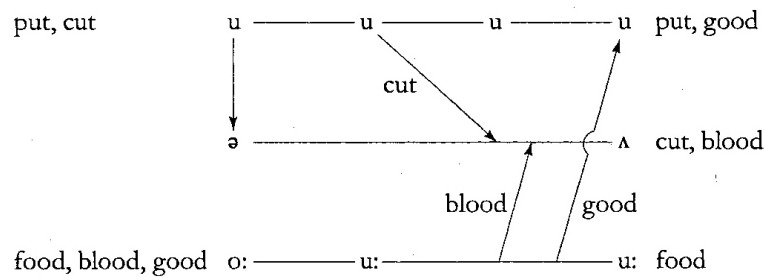


Figure 4.2 The historical development of Middle English short /u/ and long /o:/ (from Lass 1999: 90).

An examination of regional variation in present-day English shows that the STRUT vowel differs greatly across dialects, both in terms of its phonemic status and its phonetic realisation. Firstly, some varieties did not undergo the FOOT-STRUT split and therefore lack a phonemic distinction between the two vowels. Most notably, the sound change did not affect broad accents of the north of England (including the East Midlands; see section 4.2.4.3) and only partially occurred in Ireland (Wells 1982; Harris 1996; Ferragne & Pellegrino 2010). Furthermore, in a number of second-language varieties and pidgins and creoles, STRUT is distinct from FOOT but has merged with other vowels. For example, while a number of Englishes in Asia display six short vowels, African varieties almost exclusively have a system with five short monophthongs only, which results from STRUT falling together with either TRAP or LOT (Mesthrie & Bhatt 2008).

The phonetic quality of STRUT displays marked regional variation as well. Northern English English dialects tend to retain [ʊ] for both FOOT and STRUT, but realisations close to [ə] are also found for the latter (see section 4.2.4.3). In varieties affected by the FOOT-STRUT split, the range of variants attested for the CUT [i.e. STRUT] vowel is quite impressive. The phonetic area involved extends from back to fully front and from half-close to fully open, with a difference in lip rounding also implicated (Harris 1996: 27). Commonly reported phonetic qualities of STRUT are [ʌ] for most North American English varieties; lowered and fronted [ʌ̟] or [ɐ] for RP, southern British English, as well as

<sup>13</sup> See e.g. Harris (1996) for a more complex reconstruction of the interaction of the lowering of /u/ and shortening of /o:/.

southern hemisphere Englishes; even more front variants approaching or reaching [a] for the southern hemisphere varieties and Cockney; and rounded realisations such as [ɔ̹] for e.g. Irish English (Wells 1982; Harris 1996; Gordon et al. 2004; Upton 2004a, 2004b). Second-language and other contact-induced varieties of English tend to display either mid back rounded variants such as [ɔ̹], found mostly in West Africa and the Caribbean, or low unrounded ones such as [ʌ], [a] or [ɑ], reported predominantly for East and South Africa, Asia and the Pacific region (Harris 1996; Mesthrie 2004c; Mesthrie & Bhatt 2008; see also section 4.2.4). As shown below, an even greater amount of variation is found for the NURSE vowel.

### 4.2.3 NURSE

Drawing on Wells (1982: 137), the standard lexical set NURSE is defined as comprising those words whose citation form contains the stressed vowel /ɜ:/ in RP and /ɜr/ = [ɜ̹] in GenAm (as in *turn, bird, person, heard, work*). According to Wells (1982: 137), this is a relatively long unrounded mid central vocoid, [ə̞]̞, which is rhoticised or r-coloured in General American English but not in RP; both forms are extremely uncommon as stressed syllabics in the languages of the world other than English; they are thus one of the striking features of English pronunciation to the foreign ear. I briefly return to this point below.

Like STRUT, NURSE is a comparably recent addition to the English vowel system (Wells 1982; Lass 1999, 2006; Barber et al. 2009). It has three main Middle English sources, short /i/, /u/ and /e/ in the environment of a following word-final or preconsonantal /r/. These vowels coalesced into a mid central vowel [ə̞] during a sound change known as the NURSE merger. Wells (1982: 199-200) dates this innovation to the 15<sup>th</sup> century, stating that it originated in northern and eastern English dialects and later reached London English and the ancestor of modern RP. According to Lass (1999: 112-113), /i/ (*stir*) and /u/ (*turn*) first merged under /u/ and were subsequently joined by /e/ (*earth*) (see also Maidment 1995). By roughly 1800, the merger was complete in England, resulting in a vowel which generally had the same quality as STRUT (but later became distinct from it by raising and frequently also rounding; Lass 2006: 91). This new vowel then underwent lengthening (Wells 1982), and the following /r/ was lost during the general R Dropping process which characterised eighteenth-century England (see section 4.1.1). A summary of the history of NURSE can be found in figure 4.3 (from Lass 1999: 113).

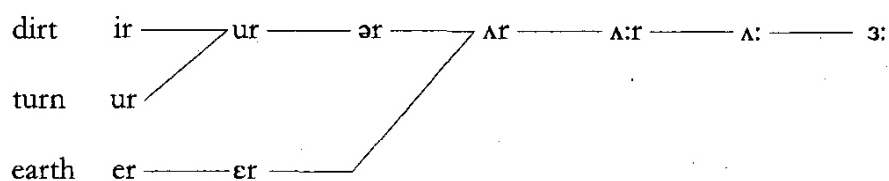


Figure 4.3 The historical development of the NURSE vowel (from Lass 1999: 113).

In contemporary English, the NURSE vowel displays considerable variation at both systemic and realisational level. For example, although the NURSE merger occurred in most varieties of English, it did not take place, or took place only partially, in many Scottish and Irish English dialects, so that these varieties have no distinct NURSE phoneme (Wells 1982; Lass 1999). In some parts of northern England, NURSE merged with SQUARE (e.g. Merseyside, Hull and Middlesbrough; see also section 4.2.4.3), or with NORTH (e.g. in some traditional dialects of the northeast), and in General American English and many other accents, it coalesced with STRUT when the latter appears before /r/, as in *furry* and *hurry* (Wells 1982; Upton 2004b; Ferragne & Pellegrino 2010). Merger with other vowels has also occurred in a number of Outer Circle Englishes (cf. Schneider et al. 2004).

The phonetic quality of NURSE varies greatly across those dialects that have the phoneme. As Wells (1982: 138-9) points out, the most evident difference is between rhoticised and non-rhoticised realisations, found in rhotic and non-rhotic accents, respectively. Beyond the main central qualities [ə, ɜ, ɜ̃, ɜ̃̄], variants attested for this vowel in Inner and Outer Circle varieties include: backed pronunciations such as [ʌ] in Liberia (Liberian Settler English) and Pakistan; backed (and raised) rounded realisations such as [ɔ] or [o] in the northeast of England (recessive), Cameroon and Tobago; fronted variants such as [ɛ̃] or [ɛ] in the areas of northern England affected by the NURSE-SQUARE merger (Merseyside, Hull, Teesside), as well as in South Africa (Black South African English), West Africa, the Caribbean, the Philippines and the Pacific; fronted and lowered variants such as [a] in Nigeria, East Africa and Suriname; as well as fronted and/or raised rounded variants approaching or reaching [œ], [ø] or [e] in the northeast of England, Wales and the southern hemisphere (Wells 1982; Upton 2004b; Schneider 2004; Mesthrie 2004c;

Mesthrie & Bhattø 2008; Gordon et al. 2004).<sup>14</sup> Presumably because of this variability, the NURSE vowel was found to be highly characteristic of five world regions out of six in Schneiderø (2005) frequency-based investigation of the *Handbook* data (cf. Schneider 2007: 74-77).

The wide range of variants reported for STRUT and NURSE stands in sharp contrast with the relative lack of variation displayed by FOOT. While this variability could partly be due to the younger history of these two vowels, for Outer Circle varieties at least, it also appears to reflect a general tendency to substitute front or back vowels for central ones (Platt et al. 1984: 34), which may in turn be related to factors such as substrate influence, spelling pronunciations and, for NURSE, the rarity of the RP and General American English vowel types in the worldø languages. In the following section, I show that this trend is also found in East African English but is less characteristic of Indian English.

#### **4.2.4 FOOT, STRUT and NURSE in the input varieties**

##### **4.2.4.1 Indian English**

Qualitative work on Indian English largely confirms the relative lack of variation attested for the FOOT vowel across English dialects. As mentioned above, the FOOT-GOOSE merger, though found in many second-language varieties as well as pidgins and creoles, is generally not considered to be characteristic of English in South Asia. Most descriptions of Indian English phonology list FOOT as a separate phoneme /u/, often without giving any further details (CIEFL 1972; Wells 1982; Bansal 1978, 1990; Nihalani et al. 2004; Gargesh 2004; Mesthrie & Bhatt 2008; Pingali 2009). In terms of phonetic realisation, this Indian English short monophthong has been described as a rounded or weakly rounded [u] (Wells 1982; Gargesh 2004; Mesthrie & Bhatt 2008), the main variant reported for accents with a FOOT-GOOSE distinction, but Bansal (1990: 223) points out that it is øcloser and less centralisedø than the corresponding RP phoneme.

Beyond these general tendencies, however, some descriptions, and particularly quantitative acoustic investigations, point to a somewhat more complex picture. Wells (1982: 626) and Bansal (1978: 109; 1990: 224) note that GOOSE often exhibits variable

---

<sup>14</sup> Length marks are omitted out of simplicity here. Note, however, that, whereas in Inner Circle Englishes NURSE is usually a long vowel, in many second-language and other contact-induced varieties from the Outer Circle it tends to exhibit variable length.

length, so that it may not always be quantitatively distinct from its short counterpart. In CIEFL (1972: 15), /u:/ and /ʊ/ are listed among the phonemic distinctions that cause difficulties for Indian English speakers from a Gujarati L1 background (but not for those from a Punjabi L1 background). Gargesh (2004: 995) observes that, in addition to the main variant [ʊ], a long back vowel [u:] is found for FOOT in several parts of India (e.g. Bengal, Orissa, Bihar, UP and Rajasthan), and acoustic analyses have demonstrated that the production of FOOT and GOOSE varies considerably across Indian English speakers with different first languages. The two vowels were shown to display distinct qualities but only a modest duration difference among Tamil English speakers (Wiltshire & Harnsberger 2006), no qualitative and a modest or no length distinction among Gujarati and Tibeto-Burman L1 speakers (Wiltshire & Harnsberger 2006; Wiltshire 2005), and a great overlap in quality but significant difference in duration among Hindi and Punjabi L1 speakers (Maxwell & Fletcher 2009). As the following discussion shows, however, there is agreement in the literature that in Indian English FOOT overwhelmingly contrasts with STRUT (and NURSE).

With regard to the other two vowels analysed in this study, one feature that figures prominently in descriptions of Indian English is the lack of a clear phonemic distinction between STRUT, NURSE and schwa, coupled with remarkable variability in their phonetic realisation. Substantial overlap between either STRUT and schwa or all three vowels is mentioned by a number of sources:

There is basically only one short central vowel, not phonetically distinct stressed and unstressed varieties as in SBr ([ʌ] and [ə]) (CIEFL 1972: 7).

Turning to general Indian English, (í ) there is often no phonemically distinct NURSE vowel; and the status of the oppositions /ʌ/ vs. /ə/ and /ɒ/ vs. /ɔ/ is dubious or variable (Wells 1982: 626).

[ə] and [ʌ] can be regarded as free variants (Bansal 1978: 109).

GIE [General Indian English] has one phoneme /ə/, realised indiscriminately as [ə] and [ʌ], corresponding to RP /ʌ/, /ɜ:/ and /ə/. So /ə/ in GIE occurs in accented syllables also, and words like *shut* and *shirt* are distinguished only by the presence of /r/ in the latter (Bansal 1990: 223).

Words which have /ʌ/ in RP may have only /ə/ in Indian English (Agnihotri 1994: 237).

The three central vowels /ʌ/, /ɜ:/ and /ə/ of BRP [British Received Pronunciation] have only one corresponding vowel /ə/ in EIE [Educated Indian English].

	<i>BRP</i>	<i>EIE</i>
bud	/bʌd/	/bəd/
bird	/bɜ:d/	/bərd/
about ( <i>first syllable</i> )	/ə'baʊt/	/ə'baʊt/

(Nihalani et al. 2004: 209)

According to Pingali (2009: 24-25), the contrast between /ʌ/ and /ə/ is sometimes neutralised in the non-rhotic prestige accent, Standard Indian English pronunciation (SIEP), and neutralised in non-standard Indian English varieties (see section 4.1.3.1 for her definition of these subvarieties). She also reports [a] as a minority variant for STRUT and notes that NURSE is realised as [ɜ:] in non-rhotic SIEP and as [ə] or [a] in rhotic varieties of Indian English (Pingali 2009: 25).

Overlap and variation likewise emerge from the phonetic qualities documented for Indian English STRUT and NURSE by other authors. In CIEFL (1972: 5-6), the main phonetic realisations reported for STRUT and NURSE are [ə] and [ər], respectively, with [ɜ:r] also listed as a common variant for the latter. Wells (1982: 626) observes that STRUT is realised as [ʌ ~ ə] and NURSE as [ər ~ ʌr] or, less frequently, [ɜ], and Gargesh (2004) mentions a number of regionally distributed variants. As regards STRUT, the author writes that [w]hile it is usually realised as [ʌ], some informants from Kashmir, Haryana and Uttar Pradesh (UP) articulate it as the non-stressed [ə] (Gargesh 2004: 995).<sup>15</sup> Moreover, he notes that NURSE most commonly appears as [ɜ:] but also occurs as [ʌ] in Gujarat, Rajasthan, Haryana, Punjab and in North-East India. In Maharashtra, UP, Tamil Nadu, Karnataka, Andhra Pradesh (AP), and Kerala it realized as [ə]. In areas of Orissa and Bengal it is also articulated as [a:] (Gargesh 2004: 995). The evidence from these qualitative accounts suggest, however, that while often lacking a contrast in quality, STRUT and NURSE may be variably distinguished either by the appearance of /r/ after NURSE or by a difference in vowel duration.

Like Gargesh's (2004) description, quantitative acoustic findings revealed variation related to regional-linguistic background. Tibeto-Burman L1 speakers of Indian English tend to realise STRUT as [ʌ] and NURSE as [ə] (Wiltshire 2005). In Wiltshire & Harnsberger's (2006) study of Gujarati English and Tamil English, the realisation of STRUT

<sup>15</sup> According to Gargesh (2004: 995), some Indian English speakers also follow the written convention to realize it as [ʊ]. To my knowledge, this is the only source reporting [ʊ] as a (minority) variant for STRUT in Indian English.

and NURSE is not discussed explicitly, but the plot representing the vowel spaces of the two Indian English varieties points to a qualitative difference between the two vowels (Wiltshire & Harnsberger 2006: 98). Maxwell & Fletcher (2009: 62), on the other hand, report that a lack of distinction between central vowels was common among their Hindi and Punjabi L1 subjects: *õ*[d]epending on the speaker, our results indicate a high level of overlap between the NURSE and STRUT vowels, or between the NURSE vowel and the final vowel in *comma*. In addition, the results show a substantial degree of variation in the phonetic realisation of the NURSE vowel (í ).ö The main variants produced by their participants were [e] (most frequent) and [ʌ] for STRUT; [ə:(r) ~ ʌ:(r) ~ e:(r)] for NURSE; and [ə ~ e] for *comma* (Maxwell & Fletcher 2009: 66-67). NURSE differed from STRUT and *comma*, however, in that it was invariably produced as a long vowel. Likewise, the mean duration values listed in Wiltshire (2005: 291) and Wiltshire & Harnsberger (2006: 98) indicate that NURSE is generally longer than STRUT.

Finally, a look at English in the Indian diaspora reveals both similarities and differences from the patterns reported for Indian English FOOT, STRUT and NURSE on the subcontinent. A weakly rounded [ʊ] is also the most common variant of FOOT in South African Indian English, but [ʊ̹] occurs as an alternative pronunciation in this variety as well (Mesthrie 2004b). South African Indian English STRUT and NURSE are clearly different phonemes, with the former being mostly realised as (a somewhat centralised) [ʌ] and the latter predominantly as (a slightly raised) [ɜ:]; considerable overlap is found, however, between NURSE and SQUARE [e:] for some speakers (Mesthrie 2004b).

As already noted in the survey of research on the British Asian diaspora in section 2.1, Evans et al. (2007) found that among their Gujarati informants from London, first-generation speakers produced vowel categories similar to those of their first language, whereas second-generation speakers approximated the local SSBE vowel system; a similar cross-generational pattern was reported for the London Bangladeshi community by McCarthy et al. (2011). In the Gujarati community, *hood* (FOOT) was more front and somewhat lower for second-generation speakers than for the first generation, who displayed very similar qualities for both *hood* and *whoʊd* (GOOSE). In contrast, the realisation of *hud* (STRUT) and *heard* (NURSE) was similar across generations, with the vowels having central but distinct qualities for both groups (cf. the vowel plot in Evans et al. 2007: 1743). Of McCarthy et al. (2011) Bangladeshi subjects, early first-generation and second-generation speakers exhibited SSBE-like qualities for *book* (FOOT), *cup* (STRUT) and *bird* (NURSE),

whereas late first-generation informants had merged *book* and *boot* and tended to use peripheral qualities both for the *book-boot* vowel and for *cup* and *bird*, which were located close to each other at the bottom of the vowel space (cf. also the vowel plot in McCarthy et al. 2011: 1356). All Bangladeshi groups were alike, however, in having a distinction in duration for *cup* and *bird*.

#### 4.2.4.2 East African English

East African English has been reported to have a much simpler vowel system than RP, comprising five monophthongs only.<sup>16</sup> Schmied (2004: 927) claims that, together with the avoidance of central vowels and the monophthongisation of certain diphthongs, the loss of distinctive length has led to a number of vowel mergers in this variety:

[l]ength differences in vowels are levelled and not used phonemically; thus FLEECE and KIT, GOOSE and FOOT, THOUGHT and NORTH, and BATH, STRUT and TRAP tend to merge. This is not only a quantitative, but also a qualitative shift, as usually short vowels in EAfE are longer and more peripheral than in RP, especially /ɪ/ tends towards /iː/, /ʊ/ towards /uː/, /ɔ/ towards /oː/ and /ʌ/ and /æ/ towards /aː/.

Mesthrie & Bhatt (2008: 102) likewise argue that [t]he five-vowel short monophthong system is ... the core vowel system in its entirety for African varieties (except Nig Eng [Nigerian English], since (a) schwa is marginal in these varieties and (b) length distinction between vowels is not a general feature. With regard to the FOOT-GOOSE sets, they state that in the majority of L2 varieties of English in Africa and Southeast Asia, including East African English, the merged vowel tends to be realised as [u] (Mesthrie & Bhatt 2008: 122). Although, as noted earlier, phonological research on East African English is still scarce, the merger of FOOT and GOOSE in /u/ is invariably reported in the existing sources, including Angogo & Hancock (1980); Hancock & Angogo (1982); Schmied (1991a; 2006); and Trudgill & Hannah (1994). Furthermore, in a quantitative acoustic study of Black Kenyan English, Hoffmann (2011) found this subvariety of East African English to have only one front high vowel [i] and one high back vowel [u] in the respective top corners of the vowel space. He observes that FOOT and GOOSE differed with regard to vowel length,

<sup>16</sup> While the reduced number of vowels in East African English has generally been attributed to mother tongue influence (see e.g. Schmied 2004), Hoffmann (2011: 150-1) pointed out that the vowel inventories of local African languages are often more complex than is generally acknowledged.



with the former being distinctly shorter than the latter, but points out that it is not clear whether this difference was phonological or phonetic, i.e. related to differences in the following segment (Hoffmann 2011: 162).

As mentioned above, Schmied (2004: 927) also asserts that STRUT tends to fall together with TRAP and BATH under /a/. This merger is usually held to include NURSE (and at times other vowels) as well. Thus, Angogo & Hancock (1980), Hancock & Angogo (1982) and Schmied (1991a) have /a/ for *bud, bird, bad, bard*; Trudgill & Hannah (1994) have /a/ for *putt, bird, bad, bard, father*; and Schmied (2004) has /a/ for STRUT, NURSE, TRAP, START, BATH, PALM, *comma, letter, About*. Both STRUT and NURSE are regarded as highly diagnostic of regional variation in (Black) African English. According to Simo Bobda (2001: 275), one of the unifying features of the NeESA [North-east-East-Southern African] axis is their pattern of restructuring of /a/. While West Africans (except Ghanaians and northern Nigerians) systematically have /ɔ/ for *cut, love, touch*, East and Southern Africans all generally have /a/.<sup>17</sup> Schmied (1991a: 60) description of African English similarly highlights the importance of NURSE in distinguishing broad regional varieties: an interesting single parameter in this respect is the deviation of the RP long central vowel /ə:/: it tends toward a back vowel /ɔ/ in West African varieties, towards a front vowel /a/ in Eastern and towards /e/ in Southern African varieties. More recently, Wolf (2010) included the divide between /a/ and /ɔ/ realisations of STRUT and NURSE in a list of five major contrastive features of East and West African English.<sup>18</sup>

I have pointed out earlier that East African English is usually considered to be much more homogeneous than West African English (cf. section 1.3). In line with this overall pattern, the only variant for STRUT generally mentioned in descriptions of the variety is the above-mentioned low front vowel [a]. Somewhat greater variation, though, seems to exist for NURSE. Schmied (1991a: 60) draws attention to this when arguing that the broad regional differences displayed by NURSE in African English are not uniform in a region, neither across all ethnic groups (Igbo speakers tend towards /e/ and Yoruba speakers

<sup>17</sup> Simo Bobda (2001) uses the term 'North-east-East-Southern African (NeESA) axis' to refer to a group of adjacent countries including Sudan, Somalia, Kenya, Uganda, Tanzania, Zambia, Malawi, Zimbabwe, South Africa, Swaziland, Lesotho, Botswana and Namibia.

<sup>18</sup> For STRUT, it has been argued that the difference between West African [ɔ] and East and South African [a] stems from differential colonial input: West Africa was settled from the 17<sup>th</sup> century onwards, at a time when the English dialects of the colonists most likely included mid and rounded variants, whereas East and South Africa were colonised during the late 19<sup>th</sup> century, when the process of lowering and unrounding of STRUT had progressed much further (Harris 1996; Simo Bobda 2003; cf. also section 4.2.2). As Harris (1996: 33) points out, this may have interacted with mother tongue influence, with different variants of STRUT being replaced by those vowels which were most similar in the local African languages.

towards /a/), nor across the lexicon (*girl* tends towards front and *turn* towards back pronunciation). Besides the main phonetic realisation [a], open mid [ɛ] (sometimes transcribed as [e]) is the minority variant of NURSE most commonly reported for East Africa. Its use appears to be especially associated with Tanzanian English: whereas Kenya and Uganda display a 'quasi-systematic' occurrence of [a] for NURSE, the open variant is less frequent in Tanzania, where [ɛ] is also widespread (Simo Bobda 2003: 32; cf. also Simo Bobda 2001; Schmied 1991b; Wolf 2010).

Finally, further insight into the production of STRUT and NURSE in East Africa may be gained by an inspection of quantitative work on Kenyan English. Schmied (1991b: 425) auditory investigation of this variety found that among the 44 informants whose speech was analysed, the use of open (or, sporadically, open-mid) front variants for NURSE was the 'most salient and consistent' of a wide range of pronunciation features. Informants' positive reactions to such prominent and consistently used local forms led the author to conclude that they were 'clearly markers of the developing national variety of KenE (or EastAfrE)' (Schmied 1991b: 425). Hoffmann (2011) acoustic study of Black Kenyan English showed that STRUT and NURSE clustered with TRAP, BATH, START and the onset of PRICE in the low central area of the vowel space (cf. the vowel plot in Hoffmann 2011: 162). There was no statistical difference between the formant values of BATH, the reference vowel, and all other vowels except NURSE, which was slightly more back; an auditory analysis revealed that the merged set was realised as [a] or [ɐ]. This suggests that, in Kenyan English at least, there could be variation between the mid and low front qualities of STRUT and NURSE generally reported in the literature and somewhat more centralised realisations. Lastly, in line with previous research, the duration difference between BATH and most other vowels, including STRUT, NURSE, TRAP, and START, did not result being significant (see Table 8 in Hoffmann 2011: 171).

#### 4.2.4.3 East Midlands English

As noted in section 4.2.2, accents of the north of England were not affected by the FOOT-STRUT split and, therefore, have one short vowel less than accents of the south, with northern /ʊ/ corresponding to both southern /u/ and /ʌ/. The pronunciation of *some* as [sʊm] already figured prominently among the northern English dialect features reported in the late eighteenth and early nineteenth centuries (Ihalainen 1994). Together with the absence of the

TRAP-BATH split (or BATH Broadening; cf. Wells 1982), it is widely regarded as one of the defining features of the northern dialect area today. For instance, Wells (1982: 349) notes that ɔ[w]e cross from the south to the linguistic north at the point where we pass the northern limits (in broad local accents) of the FOOT-STRUT Split and of BATH Broadeningö (see also Wakelin 1972; Chambers & Trudgill 1998; Trudgill 1999; Beal 2004; Hughes et al. 2005; Barber et al. 2009).

According to Wakelin (1972: 85-87) and Beal (2004: 121-3), the majority of the midland varieties did not undergo the two splits, and an inspection of other sources reveals that this also applies to East Midlands English and the Leicester accent. Thus, Wells (1982: 349-50) notes that the above-quoted definition of the linguistic north includes Nottingham and Leicester, and Hughes et al. (2005: 91) affirm that

[t]he accent of Leicester is northern in that:

- (a) Words like *dance* and *daft* have /a/ í .
- (b) There is no distinction between pairs of words like *put* and *putt*: both have /ʊ/.

The northern limits of the region which underwent the FOOT-STRUT split are indeed marked by an isogloss which begins at the Severn estuary in the west and goes all the way to the Wash in the east (Wells 1982). Map 4.2 (adapted from Trudgill 1999: 54) shows that the East Midlands and Leicester are situated north of this isogloss, in the area where *but* is realised as [bʊt].



Map 4.2 The modern northern and southern dialect areas of England, based on the pronunciation of *but* as  $\text{öButö}$  [bat] vs.  $\text{öBoottö}$  [but] (adapted from Trudgill 1999: 54).

Wells (1982: 356) and Beal (2004: 122) report that in the north of England, the unsplit FOOT-STRUT vowel is generally realised as [u] or [ʊ]. As the reference to  $\text{öbroad}$  local accents in Wells (1982: 349) definition of the north suggests, however, the absence of a phonemic distinction between /u/ and /ʌ/ is not a ubiquitous feature of northern English varieties. More specifically,

everywhere in the north of England there is sociolinguistic variation between a more local, overtly less prestigious, five-term system, with the same /u/ in both FOOT and STRUT, and the national, overtly more prestigious, six-term system which makes a distinction between the /u/ of FOOT and some kind of unrounded and opener vowel in STRUT (Wells 1982: 351-2).

Whereas broad northern accents tend to have only one phoneme /u/ for both STRUT and FOOT, more educated varieties thus often display an intermediate system in which the former vowel does contrast with the latter but has a different phonetic quality from RP

STRUT. Wells (1982: 352) lists the following variants for this distinct northern STRUT vowel:  $\text{õa}$  vocoid somewhat opener than  $[\text{u}]$ , namely a mid back  $[\text{ɔ̃}]$ ; the unrounded equivalent,  $[\text{ɤ}]$ ; ... a half-open vocoid, unrounded or slightly rounded, similar to cardinal  $[\text{Λ}]$  ... [and] a mid or half-close  $[\text{ə}]$ , central and unrounded.ö On a similar note, Hughes et al. (2005: 60) report that  $\text{õ}[m]$ any northern English speakers, perhaps under the influence of RP, have a vowel which is between  $/\text{u}/$  and  $/\text{Λ}/$  in quality in words such as *but* í . Generally, this vowel is around  $[\text{ə}]$ .ö A related phenomenon frequently encountered in more educated northern accents is the hypercorrect use of lowered variants in FOOT words, as in *sugar*  $[\text{ʃ} \text{Λ} \text{g} \text{ə}]$  or *butcher*  $[\text{b} \text{Λ} \text{tʃ} \text{ə}]$  (Wells 1982; Beal 2004; Hughes et al. 2005).

In the context of the present study, it is important to note that the  $/\text{u}/$ -only and intermediate systems are not equally frequent across the English north. Wells (1982: 352) draws attention to this when affirming that  $\text{õ}[i]$ t appears that the further north one goes, the higher up the social scale is the crossover between a five-term and a six-term system located.ö Since the Midlands border on the area which underwent the FOOT-STRUT split, one might therefore expect this region to exhibit substantial variability in the phonemic status and phonetic quality of the two vowels, rather than categorical occurrence of an unsplit  $/\text{u}/$ . Such a view is supported, for instance, by Wellsø (1982: 352) observation that in the West Midlands conurbation, speakers of all social classes display a contrast between FOOT and STRUT to some degree but that the distinction is at times neutralised. Moreover, Ferragne & Pellegrino (2010) report that among their Birmingham English speakers, only half of the informants had the same vowel in *hood* and *Hudd* and that STRUT was located near the centre of the vowel space for this accent. Closer to Leicester, Chambers & Trudgill (1998) investigated the realisation of STRUT in the eastern transition zone between southern  $/\text{Λ}/$  and northern  $/\text{u}/$  and found this area, which included parts of Leicestershire, to be characterised by two types of transitional phenomena: mixing of  $[\text{u}]$  and  $[\text{Λ}]$  and the occurrence of a fudged (i.e. phonetically intermediate) variant  $[\text{ɤ}]$ . The use of  $[\text{Λ} \text{ ʔ } \text{ɤ}]$  for STRUT in Leicestershire is also attested in Uptonø (1995) more extensive study of the midlands and the south.

Both Chambers & Trudgill (1998) and Uptonø (1995) studies were based on data from the *SED* and therefore provide a window on a very conservative type of speech. More recent acoustic work by Evans & Iverson (2007) has examined the links between mobility, education and vowel production in a Leicestershire variety. The authors investigated how a group of speakers from Ashby de la Zouch, a small town in Leicestershire, changed their

accents as they went to university and came into contact with Standard Southern British English (SSBE). They report that for the majority of participants, the vowel in *cud* and *bud* (and, for that matter, *could*) was fronted and lowered over time, becoming more similar to the corresponding SSBE phoneme (Evans & Iverson 2007: 3819; see also section 7.2.1). This finding is in line with the results of other quantitative studies on the midlands which have shown that variants of FOOT and STRUT such as [ə] or [ʊ] are particularly common in more formal styles and among younger, middle-class or female speakers (see e.g. Docherty & Foulkes 1999 on Derby; Clark 2004 on the Black Country and Hughes et al. 2005 on the southern midlands).

As for the third vowel analysed in chapter 7, I have pointed out earlier that dialects of northern England underwent the NURSE merger and therefore usually have a NURSE phoneme. According to Wells (1982: 360-61), northern NURSE tends to be very similar to RP [ɜ:]. In those northern accents which have no contrast between NURSE and SQUARE (Merseyside, Hull, Middlesbrough; cf. section 4.2.3), the merged vowel is realised as a [ɜ:], [ɛ:], [ɛə], or with a quality in-between these variants (Wells 1982; Beal 2004). This phenomenon is relevant in the context of the present study because it may be a feature of the Leicestershire accent as well, as the following observation by Wells (1982: 361) suggests: *øI have the impression that there are various other parts of the north (Leicestershire, West Midlands, Lincolnshire?) where there is at least variable merging of NURSE and SQUARE.ø Wells (1982: 360-61) also notes that raised realisations of the NURSE vowel such as [ɜ̟: ~ ɪ̟:] are found in e.g. Birmingham and Stoke-on-Trent. Next to the main qualities [ɜ:] or [ə:], raised and/or fronted variants have been reported for other areas of the midlands as well, e.g. [ɪ:] and [ɛ:] for older working-class speakers in Derby (Docherty & Foulkes 1999); [æ:] for the Black Country (Clark 2004); as well as raised [ɜ̟:] for teenagers and older speakers and fronted [ɜ̟:] for older and working-class speakers in Sandwell (Mathisen 1999). Raised realisations of NURSE likewise occurred among Evans & Iverson's (2007) Ashby speakers, even though the overall tendency in this group was towards RP-like variants (Evans 2011, p.c.; see also section 7.2.1).<sup>19</sup>*

---

<sup>19</sup> Another type of variant of NURSE which has been reported as a traditional dialect feature of (parts of) the midlands are open or half-open back rounded realisations such as [ɒ] or [ɔ] (see e.g. Docherty & Foulkes 1999 on Derby). However, Maidment's (1995) *SED*-based investigation of this phenomenon, also known as NURSE backing, found it to be practically absent in Leicestershire.

Lastly, previous research indicates that in the north of England, the three vowels considered in this study vary relatively little in terms of length. In the sources cited above, FOOT and STRUT are invariably described as short vowels and therefore clearly contrast with the long vowels GOOSE and NURSE, regardless of whether they are qualitatively distinct from them. In line with this overall trend, the mean duration values reported for Ashby speakers by Evans & Iverson (2007: 3819) are considerably shorter for *bud*, *cud* and *could* than for *bird* and *booed*.

#### 4.2.5 The vowels: summary

In section 3.2, I have shown that the histories of the FOOT, STRUT and NURSE vowels are closely interrelated and that, from a global synchronic perspective, STRUT and NURSE tend to exhibit much more cross-dialectal variation than FOOT. The discussion of the phonemic status, phonetic realisation and duration of the three vowels in Indian English, East African English and East Midlands English has highlighted several trends that differentiate the three input varieties and may therefore help to identify the sources of influence which have shaped the dialect spoken by East African Indians in Leicester. More specifically, both Indian English and East African English have a phonemic contrast between FOOT and STRUT, whereas (broad) East Midlands English has preserved the unsplit FOOT-STRUT vowel. On the other hand, neither Indian English nor East African English display a clear phonemic distinction between STRUT and NURSE, while East Midlands English does. In Indian English, FOOT is generally realised as [ʊ], although it may be somewhat more peripheral than RP [ʊ] and overlap in quality and/or quantity with GOOSE for some speakers. The phonetic realisation of STRUT and NURSE varies considerably but central qualities tend to predominate in this variety. In East African English, FOOT has merged with GOOSE to [u], while STRUT and NURSE have fallen together with several other vowels (in particular, TRAP, START, BATH and *comma*) under [a] or, especially in Tanzanian English, [ɛ]. In dialects of the north of England, including East Midlands English, the unsplit FOOT-STRUT vowel is traditionally realised as [ʊ] (or [ʊ̯]). The phonetic quality of NURSE tends to be similar to RP [ɜ:], but raised and/or fronted variants (as well as variable merger with SQUARE) are attested for a number of places in northern England and are also found in Leicestershire.

Beyond these broad tendencies, however, each input variety is characterised by internal variation. Three aspects in particular need to be taken into account. Firstly, although the qualitative merger of STRUT and NURSE is widely reported for Indian English, some subjects (possibly including Gujarati English speakers; Wiltshire & Harnsberger 2006; Evans et al. 2007) appear to exhibit a qualitative contrast between the two vowels, and even those who do not may still distinguish them by duration or by the production of /r/ after NURSE. Secondly, even if the central quality of STRUT and NURSE in Indian English is generally different from the front quality of these vowels in East African English, Hoffmannø (2011) study of Kenyan English found them to be somewhat centralised in this variety, with NURSE being slightly more back than STRUT. Finally, whereas broad forms of East Midlands English and, more generally, northern English dialects differ from Indian English and East African English in having no FOOT-STRUT distinction, more educated varieties often do have a contrast between the two vowels and characteristically display fudged realisations of STRUT such as [ə] or [ʌ]. This phenomenon, which seems to be particularly widespread in the midlands, is especially relevant in the context of the present study, since participants tended to come from a middle-class background.

### 4.3 Chapter summary

Chapter 4 traced the history of postvocalic /r/ and the FOOT, STRUT and NURSE vowels in British English and described their occurrence in Indian English, East African English, and East Midlands English. A summary of these patterns can be found in section 4.1.4 (for postvocalic /r/) and section 4.2.5 (for the vowels). The discussion showed that if considered together, these variables clearly differentiate the three input varieties. For example, Indian English differs from East African English and East Midlands English in being variably rhotic, East African English differs from the other two varieties in displaying fronted variants for STRUT and NURSE, and East Midlands English differs from Indian English and East African English in having no separate FOOT and STRUT phonemes (in its broad forms) but having a qualitative contrast between STRUT and NURSE. The production of these variables by East African Indians in Leicester can therefore be fruitfully analysed in order to trace the relative influence of the three input varieties on the speech of the migrants, with the obvious caveat that internal variation within each dialect needs to be taken into account as well.



## **5. Method**

### **5.0 Introduction**

This chapter presents the method used for collecting and analysing the data and is divided as follows: section 5.1 gives an account of the fieldwork I conducted for the present study, including the way in which I recruited participants, the social characteristics of the speakers selected for analysis, and the technique I employed to conduct interviews. The rest of the chapter focuses on data analysis. Variation in the use of postvocalic /r/ was analysed auditorily, while the production of FOOT, STRUT and NURSE was investigated acoustically. In section 5.2, I discuss how the analysis of postvocalic /r/ was carried out, covering token selection and coding of the dependent and independent variables. In section 5.3, I provide a description of the analysis of the vowels, which includes token selection, formant and duration measurements, normalisation of the raw formant data, as well as coding of the independent variables. The chapter ends with an introduction to mixed-effects modelling, the statistical technique used to assess the effect of independent variables on the production of coda /r/ and the vowels, and with a discussion of why I considered this method more suitable to this dataset than more traditional programs like GoldVarb (section 5.4).

### **5.1 Data collection and participants**

The data for this thesis was collected in sociolinguistic interviews that I carried out in Leicester during summer 2007 and summer 2009. I gained access to the East African Indian community with the help of a common acquaintance. Through this person, I was able to approach a considerable number of potential participants as a *friend of a friend* (Milroy & Gordon 2003: 32), asking them whether they would be willing to be interviewed for a Ph.D. project on language within the Leicester East African Indian community. The great majority readily accepted to participate and the informants were very friendly and cooperative during the interviews. Several of them went through great efforts to help me find further participants afterwards, so that I was able to recruit more participants in a *snowball* fashion (Milroy & Gordon 2003: 32).

In total, I conducted 33 interviews with 41 individuals. 29 of these were one-on-one interviews in which the speaker was interviewed alone or, on a couple of occasions, in the

presence of another person (e.g. the wife or a friend), while four were group interviews with two or more informants. From this initial sample, I selected 25 subjects who fell into the first- and second-generation categories, defined as follows: first-generation participants were speakers of East African Indian background who had been born and raised in East Africa (Kenya, Uganda or Tanzania) and moved to England at the age of 18 or later, whereas second-generation participants were speakers of East African Indian origins who had been born and raised in Leicester or moved there before the age of 5, attending the bulk of their schooling in the East Midlands. Informants who had migrated to Leicester when they were aged between 5 and 17 were excluded from the analysis due to the in-between status of this age range with regard to first- and second-language acquisition. The following cases were also disregarded: for the first generation, speakers who had moved back to the Indian subcontinent at a very young age and spent most of their pre-UK life there, and/or who spoke no English when they arrived to England; and for the second generation, speakers who had lived away from Leicester for a considerable number of years during their childhood or adolescence. Furthermore, three second-generation speakers (the children of an interviewee) were excluded because their speech samples were too small for a quantitative analysis.

As shown in table 5.1, the final sample included 11 first-generation and 14 second-generation speakers (with a further two subjects being excluded from the acoustic analysis for technical reasons; see section 5.3.1). The first generation comprised six female and five male participants, aged between 42 and 80 (median = 60). Whereas the majority came from a Gujarati first-language background, most in fact reported to be multilingual, speaking two or more Indian languages, English, and (some) Kiswahili. All participants had been born and raised in Kenya or Uganda, where most had attended English-medium schools at least up to O-level or A-level. Following a widespread East African Indian practice, three informants had also spent some time in India for education and/or work. The majority of participants left East Africa in the 1960s or 1970s. When they migrated, half of them were students in their early twenties, while those who left at a later age had middle-class occupations, e.g. working as teachers or bank employees, or were housewives, as was typical for East African Indian women at the time. After their arrival in England, informants were often forced to work in factories for some time but most eventually set up their own businesses or entered the accounting, education and social work professions, with some holding positions at managerial level.

Table 5.1 Social characteristics of the participants.

speaker	generation	gender	age	heritage language	country of birth
E	first	male	80	Gujarati	Kenya
F	first	female	72	Gujarati	Kenya
G	first	male	57	Gujarati	Uganda
I	first	female	75	Punjabi	Kenya
J	first	female	63	Gujarati	Kenya
K	first	male	50	Kutchi	Kenya
N	first	female	73	Punjabi	Kenya
S	first	female	54	Gujarati	Uganda
T	first	male	60	Gujarati	Uganda
W	first	female	42	Gujarati	Kenya
X	first	male	58	Gujarati	Uganda
A	second	male	25	Gujarati	UK
B	second	male	41	Gujarati	Uganda
C	second	female	34	Gujarati	UK
D	second	female	24	Gujarati	UK
H	second	male	28	Gujarati	UK
L	second	female	17	Gujarati	UK
M	second	male	25	Gujarati	UK
O	second	female	23	Gujarati	UK
P	second	female	27	Gujarati	UK
Q	second	male	38	Gujarati	UK
R	second	female	37	Gujarati	Uganda
U	second	male	30	Gujarati	UK
V	second	male	17	Gujarati	UK
Y	second	female	22	Gujarati	UK

The second generation included seven female and seven male speakers, aged from 17 to 41 (median = 26). All were born and raised in Leicester except two participants who had arrived to England at the age of 2 and 4, respectively. In contrast to the first generation, second-generation informants exclusively came from a Gujarati background, with self-reported proficiency in the heritage language varying greatly across individual speakers. In most families, both parents were from East Africa (Kenya, Uganda or Tanzania). In three cases, however, the speaker's mother came from India. This reflects a common tendency among East African Indian men, who often married women from the subcontinent, and is therefore representative of the community. While indicative of strong links with India, this practice represents a methodological complication for the present study, as it adds further complexity to the set of varieties these speakers were exposed to. Finally, all but two participants had either completed university-level education, often commuting or moving to

a different British city for a few years, or were (in two cases) doing their A-levels with the aim of attending university. Much like their parents' generation, most subjects had set up their own businesses or were employed in the banking, retail, education and social work sectors.

Participants were interviewed in their homes and offices, or in public places such as temples and community centres, using two sets of recording equipments: a Sony MZ-RH1 Portable MD recorder with a Sony ECM-R100 Electret Condenser Microphone during the fieldtrip in 2007 and a H2 Zoom Recorder during the fieldtrip in 2009. Individual interviews lasted from 20 minutes to two hours, with an average length of an hour. Rather than carrying out Labovian interviews aimed at sampling a range of different speech styles, I chose to use a semi-structured, more open-ended type of interview in order to make the interaction more relaxed and natural (Feagin 2002: 29-30). Without a predetermined order, I elicited information about the speakers' biographical background, language proficiency, use and attitudes, as well as cultural and ethnic affiliations, while also taking up whichever topics they enjoyed talking about and letting the conversation flow as freely as possible.

Because in western societies the interview is a well-known type of speech event with clearly defined participant roles, it has been suggested that 'individuals who are being questioned will seldom produce large volumes of speech in their replies' (Milroy & Gordon 2003: 63). During the fieldwork for the present study, though, this difficulty rarely arose. Informants often produced long stretches of speech in response to questions, possibly due to the way I was introduced to them, the choice of a semi-structured rather than structured type of interview, or cultural differences in the perception of this type of speech event. As in most cases speakers were interviewed alone and the interviewer (the present author) was a white person they had never met before, the data collected for this study is likely to be of a more formal type (for an investigation of style-shifting within a diasporic Indian community, see Sharma 2011b). Note, however, that most participants were used to interacting with strangers and members of other ethnic communities in relatively formal situations. Particularly for first-generation speakers, this was in fact one of the typical settings in which English would be used, with communication in more informal domains being usually carried out in the mother tongues.

## 5.2 Postvocalic /r/: auditory analysis

### 5.2.1 Token selection

The auditory analysis of postvocalic /r/ was based on the samples of relatively spontaneous conversation which were collected during the sociolinguistic interviews described above. As it often takes some time for interviewees to settle into a more relaxed speech style, the first fifteen minutes of each interview were left out from the analysis, except in a few cases where this would have prevented me from collecting enough instances of postvocalic /r/ (speaker F, speaker W, speaker E and speaker M).

50 tokens of postvocalic /r/ in prepausal (PP) and preconsonantal (PC) contexts were extracted for every speaker.<sup>1</sup> Following Wellsø (1982: 219-220) definition of R Dropping in connected speech (see section 4.1), the prepausal category included tokens of word-final postvocalic /r/ occurring at the end of an utterance, [before] a pause, or a major syntactic boundary. Any instance of coda /r/ followed by a consonant across an optional morpheme or word boundary (Wells 1982: 219-20) was considered preconsonantal. Examples from the corpus include:

- 1) PP: *when I was younger //, will disappear //, it's not really fair //, didn't get that far //*
- 2) PC, morpheme-internal: *force, weird, person, hard, opportunity*
- 3) PC across morpheme boundary: *retirement, properly, doors, appears, scared*
- 4) PC across word boundary: *you're poor there, hear things, we dare to, my father came*

Occurrences of word-final postvocalic /r/ in prevocalic environments have been treated in different ways in sociolinguistic research. Labov (1972b: 72), for instance, excluded cases such as *four o'clock* on the grounds that [t]his forms a separate subcase in New York City, with a much higher percentage of constricted /r/, and linking /r/ was similarly disregarded by Feagin (1990), Gordon et al. (2004) and Piercy & Britain (2011). In other investigations,

---

<sup>1</sup> In accordance with Labov's (1972b: 72) principle of accountability, I use the term 'token' to refer to every case where the variable element occurs in the relevant environments. It includes, in other words, both cases in which postvocalic /r/ is pronounced and cases in which it is absent.

word-final (and sometimes word-internal) linking /r/ tokens have been included in the analysis (Labov 1972a; Romaine 1978; Myhill 1988; Becker 2009; Nagy & Irwin 2010; Chand 2010). In the present study, I noted tokens in linking /r/ environments but coded them separately, with no target number aimed at. Following Becker (2009), I only extracted tokens of word-final linking /r/, e.g. (from the corpus) *enter it again, wear all the time, a poor area, a fear of, prefer it*. Cases of word-internal linking /r/ (*fearing*) were excluded for two main reasons. Qualitative descriptions (e.g. Wells 1982; Lass 1999) report word-internal linking /r/ to be (nearly) categorical and word-final linking /r/ to be frequent but variable, a claim which has been confirmed in quantitative studies of English r-sandhi phenomena (cf. Hay & Sudbury 2005; Barras 2010). While this cannot be assumed to apply to every variety of English (see e.g. Labov 1972a for a counterexample), I noticed no variation among my participants in word-internal linking /r/ environments, whereas word-final ones were clearly variable (see chapter 6). Furthermore, instances of word-internal linking /r/ are very rare in spontaneous conversation;<sup>2</sup> an empirical study is therefore likely to require complementary data collection techniques such as the reading and elicitation tasks used by Barras (2010). Finally, overt phonetic realisations of intrusive /r/ were also noted, but no quantitative analysis was undertaken, since in natural speech data the environments in which unetymological word-final /r/ may surface are even more infrequent than word-internal linking /r/ contexts.<sup>3</sup> Examples from the corpus include *going back to Uganda(r) in in that respect, to India(r) in Christmas, and very good idea(r) of my mother*.

A methodological issue in studies based on spontaneous conversation data is the so-called type-token question, that is, whether a limit should be set to the number of occurrences of individual lexical items included in the analysis. As Tagliamonte (2006: 95) notes, this issue is especially important in work on phonological variation, ÷where the inclusion of frequently occurring words with exceptional distribution patterns may distort the result.ö In spite of this, few studies address the question explicitly (Tagliamonte 2006: 95-96). While sociolinguistic research on postvocalic /r/ generally appears to be no exception to this, type-token decisions were reported by Gordon et al. (2004) and Hay & Sudbury (2005), who restricted the number of tokens per lexical item to 10 per speaker, as

---

<sup>2</sup> For instance, Hay & Sudbury (2005) analysis of early New Zealand English recordings yielded 3,894 tokens of word-final linking /r/ but only 142 tokens of word-internal linking /r/ (compared to a total of 13,760 tokens of non-prevocalic /r/).

<sup>3</sup> By way of illustration, in the above-mentioned study of early New Zealand English (Hay & Sudbury 2005), only 198 tokens of word-final intrusive /r/ and 18 tokens of word-internal intrusive /r/ occurred in the stretches of speech analysed by the authors (compare this again to the total of 13,760 non-prevocalic tokens).

well as Chand (2010), who adopted a rather stricter limit of 3 tokens per type. In the present study, I considered a maximum number of three tokens per lexical item an appropriate limit given the total amount of 50 tokens per participant.

Furthermore, certain occurrences of postvocalic /r/ were defined as non-count cases. As noted above, linking /r/ and intrusive /r/ were coded but not included in the main analysis. This was because both rhotic and non-rhotic speakers may pronounce postvocalic /r/ in these contexts, so that they are indistinguishable on the surface (cf. section 4.1.2). I also excluded unstressed lexical items and function words (but note that in the stressed lexical items which were analysed the syllable containing postvocalic /r/ may have been unstressed). Moreover, I followed Tagliamonte (2006: 88 ff.) in removing several other cases from the analysis: formulaic utterances, including discourse markers; neutralisation contexts; and natural speech anomalies. Discourse markers (*as it were*) were disregarded as they may behave idiosyncratically (Tagliamonte 2006: 90-1); for the same reason, place names (*Leicester, Derby*), proper names (*Ravinder*) and loanwords (*Urdu, durzee* †tailorø) were excluded as well. Neutralisation contexts are cases in which independent processes exist which make the reliable identification of the variant under investigation difficult (or near impossible) (Tagliamonte 2006: 91); in the present study, these included tokens of word-final postvocalic /r/ which were followed by a word beginning with /r/ (*higher risk, the paper round*). I also removed tokens in which the vowel preceding /r/ was not clearly audible (*government, properties*) or in which it was indistinguishable from a following vowel across a word boundary (*fire alarms, better area, remember as well*), as well as overlaps and cases where unambiguous interpretation of the utterance and/or classification of the variable were not possible due to hesitation, false starts, repairs etc.

### 5.2.2 Coding the dependent variable

Most sociolinguistic investigations have used a binary classification of postvocalic /r/, distinguishing between presence vs. absence of consonantal constriction (but cf. Stuart-Smith 2007; Llamas 2010; Lawson et al. 2011 for more fine-grained categorisations). As regards work on Indian English coda /r/, this is also the strategy adopted by Sahgal & Agnihotri (1988). Sharma (2005a) and Chand (2010) coded three types of variants: null realisations, trills and approximants. Both studies then merged these categories to a binary classification for the main analysis, but they differ in that the former contrasted (Indian

English) trills and non-rhotic variants with (American English) approximants, while the latter conflated trills and approximants due to the low frequency of trilled tokens. Wiltshire (2005), Wiltshire & Harnsberger (2006) and Hirson & Sohail (2007) used a two-way distinction between presence vs. absence to investigate the frequency of postvocalic /r/ among their informants; in addition to this, they also carried out fine-grained analyses of the phonetic realisation of rhotic consonants in general.

For the sake of comparability, I followed the majority of studies in adopting a binary classification of postvocalic /r/ for the main analysis, coding for its presence vs. absence. Tokens with any kind of audible consonantal constriction, ranging from r-coloured vowels to vowels followed by approximant, trilled or tapped realisations of /r/, were categorised as *rhotic*, while tokens with no audible consonantal constriction were considered *non-rhotic*. As in Foulkes (1997) and Hay & Sudbury (2005), tokens in which a vowel was followed by a glottal stop were also included in the non-rhotic category. Moreover, I subdivided rhotic tokens into approximant variants, on the one hand, and tapped and trilled realisations, on the other.<sup>4</sup> This was done to gain additional insights into the potential influence of the three input varieties on the use of coda /r/ by the participants. Although, as discussed in section 4.1.3, each variety is characterised by internal variation in the phonetic realisation of rhotic consonants, on a general level, the two categories *approximants* and *taps/trills* can in fact be regarded as representative of English and non-English English variants, respectively.

### 5.2.3 Coding the independent variables

Of the various linguistic constraints that have been the focus of sociolinguistic research on postvocalic /r/ (see section 4.1.3.1.1), one in particular appeared to have a strong effect on patterns of occurrence of coda /r/ among my East African Indian participants, namely following phonological environment. Based on Wellsø (1982) definition of R Dropping in connected speech (cf. section 5.2.1), I divided following phonological contexts into prepausal (*when I was younger //*) and preconsonantal (*hard, retirement, my father came*) for the main analysis, coding word-final prevocalic environments (*enter it again*) separately. Even though more fine-grained classifications have been fruitfully employed in

---

<sup>4</sup> No further distinctions were made due to the low number of tokens (215 and 111 with and without word-final prevocalic contexts, respectively).



previous work on postvocalic /r/ in Indian English (Chand 2010) and other varieties (Nagy & Irwin 2010; Piercy & Britain 2011), I adopted a simple categorisation system in the present study due to the relatively small sample size (550 tokens, excluding second-generation speakers, who showed nearly no variation in the use of coda /r/, and word-final prevocalic contexts). Linguistic factors like preceding vowel and syllable stress were not examined because the vowel inventories and stress patterns of first-generation participants in particular diverged too much from the reference accents to allow for reliable coding in terms of widely used classification systems such as Wellsø (1982) lexical sets, or RP or Standard American English lexical stress patterns.

The first and arguably most important social constraint on patterns of occurrence of postvocalic /r/ included in this study is generation. Informants were categorised into first- and second-generation speakers according to the criteria outlined in section 5.1. Further external or social factors that were included in the analysis of variation in the production of coda /r/ by first-generation migrants were gender (coded as a factor with the levels male vs. female) and age (coded as a continuous numeric variable). The effect of these predictors was examined because both were reported to significantly affect the occurrence of postvocalic /r/ in Indian English (Sahgal & Agnihotri 1988; Chand 2010: cf. section 4.1.3.1.2). While it is likely that the considerable differences in rhoticity levels found among first-generation speakers were also related to other social factors, e.g. education level, strength of links with India, or mother tongue influence, these variables were not included in the analysis because of the small sample size (11 speakers) and other methodological difficulties discussed in section 6.2.2.

### **5.3 Vowels: acoustic analysis**

#### **5.3.1 Token selection**

The acoustic analysis of FOOT, STRUT and NURSE is based on spontaneous speech data from 23 participants. Two first-generation informants, speaker F and speaker J, were excluded because the quality of the sound files did not allow for reliable formant measurements (their interview had taken place in a cafe with background music). For most of the remaining speakers, I analysed roughly 30 minutes of conversation. Since, as mentioned in section 5.2.1, people tend to take some time to settle into a more relaxed style when being

interviewed, I left the first 10 minutes of each interview out. I already started extracting tokens after the first 10 minutes of each interview though (rather than after the first 15, as in the analysis of postvocalic /r/) because the vowels were not as frequent as coda /r/. This generally yielded a sufficient number of tokens for the statistical analysis, except in some cases where it was necessary to collect tokens from earlier or later stretches of the conversation as well. This was usually either because the interview was relatively short (speaker M) or because it had taken place with more than one person (speaker W, speaker D, speaker P). The final corpus comprised 2,440 tokens of FOOT, STRUT and NURSE.

While in the rhoticity analysis I extracted a maximum of three tokens per type in order to obtain greater lexical variability in the dataset, in the acoustic analysis of the vowels I resolved not to restrict the number of tokens per lexical item. Since STRUT, NURSE and especially FOOT are much less frequent than postvocalic /r/, such a restriction would not have allowed me to collect a sufficient number of vocalic tokens for every speaker. Note, though, that although this decision led to a greater lexical imbalance in the sample, with words such as *good*, *become* or *work* being considerably more common than *sugar*, *bubble* or *nervous*, in the regression analysis such biases were controlled for by adding lexical item as a random factor (see section 5.4).

The selection of tokens was, however, limited in several other ways. Most importantly, I restricted the analysis to content words and selected occurrences of FOOT, STRUT and NURSE with primary stress only. This was because in native varieties of English, function words are often unstressed and vowels tend to be reduced to schwa in unstressed position – a phenomenon that was particularly common among second-generation informants. Furthermore, since for first-generation speakers stress placement tended to differ from the standard stress patterns of native speakers, tokens in content words were selected on a word-by-word basis. I extracted occurrences of FOOT, STRUT and NURSE from monosyllabic, bisyllabic and polysyllabic lexical items, as illustrated by the following examples from the corpus:

- 5) FOOT: *put*, *pushed*, ***looking***, *cookery*, *understood*
- 6) STRUT: *bus*, *love*, ***study***, *country*, *government*
- 7) NURSE: *heard*, *worse*, *dirty*, ***nursery***, *university*

Function words (*could*, *but*, *her*) and content words in which the vowel of interest carried secondary stress (*understand*) or no stress (*suppose*) were omitted from the analysis, as were tokens which display alternative pronunciations, like *Muslim* [mʊzlɪm] or [mʌzlɪm] (cf. Wells 2000).<sup>5</sup>

Besides stress, another aspect which needs to be considered in an acoustic analysis is the influence of the preceding and following segments on the vowel formant and duration values. One way of controlling for undesired coarticulation effects is to make use of test words in carrier sentences or word lists. This type of data was commonly employed in instrumental phonetic work relevant to the present study (Wiltshire 2005; Wiltshire & Harnsberger 2006; Evans et al. 2007; Evans & Iverson 2007; Maxwell & Fletcher 2009; McCarthy et al. 2011; see section 7.2.1 for a discussion of how this may affect comparability) but has the obvious disadvantage of being less naturalistic. Studies based on connected speech (reading passages or samples of spontaneous conversation), on the other hand, often lessen coarticulation effects by excluding one or more of the environments which tend to affect adjacent vowels most strongly, namely: preceding /j, w/, preceding and/or following /l, r/ and preceding and/or following nasals (cf. Deterding 1997; Fabricius 2007a; Torgersen & Kerswill 2004; Kerswill et al. 2008; Hall-Lew 2009; Hoffmann 2011).

A different approach, though, was taken in this study: I coded the data for preceding and following phonological environment but did not exclude any context from the acoustic analysis. This choice was due to two main reasons. A practical one was that the omission of these environments would have led to an even smaller number of FOOT tokens. Rather than including all possible contexts for one vowel and disregarding some for the other two, it seemed more advisable to opt for consistency and include all environments for all vowels in the analysis. The second reason was that some of above-mentioned contexts were extremely common in the dataset. For example, of the 1,247 STRUT tokens included in the sample, as many as 56% were preceded and/or followed by a nasal consonant. Because of their high frequency, I deemed it relevant to take such tokens into account in the analysis. The assumption on which I based this decision was that, even though different phonological environments were included, the final dataset of 2,440 tokens was large enough to permit

---

<sup>5</sup> An exception in this regard were stressed occurrences of the numerals *first*, *third* and *thirty*, which were included among the NURSE tokens in order to obtain a larger sample (NURSE being less frequent than STRUT) and a greater range of phonological environments (to counterbalance, so to speak, the commonness of lexical items such as *work* and *word*).

comparability across different vowel classes. Possible effects of this decision on the results are discussed in section 7.2.

Lastly, several other cases were classified as non-count. As with postvocalic /r/, formulaic utterances and other words and phrases which may exhibit idiosyncratic behaviour were removed from the analysis. For the vowels, this included not only place names (*Birmingham*, *Loughborough*) and loanwords (*guru*, *pundit* ‘learned person’) but also metalinguistic commentary, which has to be disregarded because it can be imitative (Tagliamonte 2006: 90). Such imitative commentary was typically produced by speakers when questioned about the local accent, as in 8):

- 8) mum [mʌm] ədʌd thatʌ it sort of thing not mum [mʌm] ədʌd mum [mʌm]  
 ədʌd (speaker L)

I also excluded vowel tokens whose duration was too brief for them to be audible or identified in the spectrogram; cases in which external factors (e.g. laughter, overlaps, background noises) could have led to faulty formant measurements; and contexts which were ambiguous due to natural speech anomalies such as hesitation, false starts and repairs.

### 5.3.2 Formant and duration measurements

The acoustic analysis was carried out in Praat (Boersma & Weenink 2010). Tokens of FOOT, STRUT and NURSE which fulfilled the criteria outlined in the previous section were segmented and labelled manually in textgrid files, based on a combination of visual inspection of the waveform and spectrogram and of auditory checking of the sound files. The vowel onset and offset were defined as follows: the onset was set at the point in the waveform where periodicity started, which usually coincided with the beginning of the first two (or three) formants bands in the spectrogram; the offset was set where the periodic signal ended and/or the formant bands of F1 and F2 became indistinct (cf. the discussions in Di Paolo et al. 2011: 90-92; Thomas 2011: 139-143). Note that with this procedure, formant transitions between the vowel and adjacent consonants were generally included in the vowel. Moreover, I also segmented and labelled the words which contained the vocalic tokens.

The frequencies of the first three formants (F1, F2, F3) and vowel duration were extracted automatically with a Praat script written by Volker Dellwo (2011). The script estimated formant values using Linear predictive coding (LPC), a by-now standard technique for the analysis of vowel formants,<sup>6</sup> and computed vowel duration as the time at vowel offset minus the time at vowel onset. With regard to the time point(s) at which formant frequencies are measured, two main approaches can be found in the literature: taking either one or several measurements per vowel (see the overviews in Di Paolo et al. 2011 and Thomas 2011). While the single-point method, which typically involves extracting one measurement in the middle of the vowel's steady-state or where F1 reaches its maximum value, is a very widespread procedure, Di Paolo et al. (2011: 90-91) argue that this approach is too simplistic and advocate collecting multiple measurements for each vowel. For this reason, three types of formant measurements were extracted with the script: the mean frequency for the entire vowel duration; the mean frequency for the middle 50% of the vowel duration; and the frequency at the temporal midpoint.

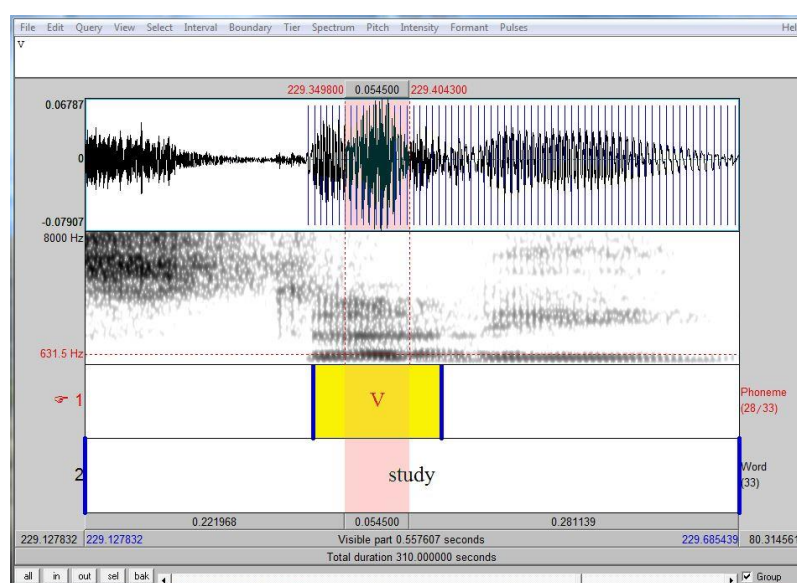


Figure 5.1 Spectrogram of a STRUT token (labelled  $\delta V\delta$ ) showing the proportion of the vowel from which formant frequencies were measured and averaged, i.e. the middle 50% of the vowel duration (highlighted in pink).

<sup>6</sup> Cf. Thomas (2011: 41-42) for a brief discussion. In the present study, LPC was carried out with the Burg algorithm, using Praat's default parameters, except that the upper limit of the analysis range was set to 5,000 Hz for male speakers and 5,500 Hz for female speakers.

A comparison of the three sets of measurements obtained with the script showed that the middle-50% measure (illustrated in figure 5.1) had the following advantages over the other two types: unlike the measure of the entire vowel duration, it generally excluded the formant transitions between the vowel and the adjacent consonants; and compared to the midpoint measure, it provided a more representative value of the vowel's formant frequencies and attenuated the effect of occasional faulty measurements. On these grounds, I used the set of middle-50% measurements for the analysis presented in chapter 7.

### 5.3.3 Vowel normalisation

A well-known difficulty in the acoustic analysis of vowel quality is that the raw formant frequencies of different speakers, particularly of men, women and children, cannot be directly compared because they are influenced by physiological or anatomical factors such as vocal tract length. To counter this problem, a number of normalisation methods have been proposed in the last decades. These are mathematical transformations of the raw Hertz data which have two primary goals for sociophonetic purposes: 1) to eliminate physiological or anatomical variation and 2) to preserve sociolinguistic variation (Adank 2003; Clopper 2009; Thomas 2011; Watt et al. 2011).<sup>7</sup>

Vowel normalisation algorithms are often classified according to the type of input information they require to transform raw formant frequencies. A basic distinction can be made between vowel-intrinsic and vowel-extrinsic, as well as formant-intrinsic and formant-extrinsic procedures (Adank 2003: 13-5; Adank et al. 2004: 3099, 3106). In vowel-intrinsic techniques, a particular vowel token is normalised using information from that token only, whereas vowel-extrinsic algorithms require information from additional vowels. Likewise, formant-intrinsic methods employ information from a single formant, while formant-extrinsic procedures include information from more than one formant.<sup>8</sup> Since the performance of normalisation algorithms varies depending on purpose and dataset, in recent years a number of comparative studies have assessed the extent to which different

---

<sup>7</sup> A third goal, preserving phonemic distinctions between vowels, is considered relevant for sociolinguistic research by some authors (Adank 2003; Clopper 2009) but not others (Thomas 2011; Watt et al. 2011).

<sup>8</sup> A further differentiation is sometimes made between speaker-intrinsic vs. speaker-extrinsic methods, depending on whether the normalisation algorithm transforms a particular speaker's formant data based on information from the vowels of that speaker only or whether it also uses information from other speakers. An example of a speaker-extrinsic method is the procedure used in Labov et al. (2006); otherwise, this type of technique is seldom used, since it requires a very large number of speakers to work effectively (Thomas 2011: 169-70).

methods are suited to sociolinguistic research. Although these investigations differed in terms of the specific normalisation procedures they examined and the criteria they used to evaluate their performance, vowel-extrinsic, formant-intrinsic techniques have generally been found to be more effective than vowel-intrinsic, formant-extrinsic ones in eliminating anatomical differences between speakers while retaining sociolinguistic (and phonemic) variation (see Adank 2003; Adank et al. 2004; Clopper 2009; Flynn 2011; as well as Fabricius et al. 2009 for a comparison of vowel-extrinsic methods only).

Despite this common finding, though, all normalisation procedures have been shown to have both advantages and disadvantages (cf. the overviews in Thomas & Kendall 2011; Thomas 2011), so that the question of which method is most suitable for a particular study needs to be carefully considered. Vowel-extrinsic, formant-intrinsic procedures operate with a conception of the entirety of the vowel space as contributing to the normalization of a single vowel token, one formant at a time (Watt et al. 2011: 114). While this principle may very well be the reason for their superior performance, it also entails that the technique works best when many or all vowels are included in the normalisation (Thomas 2011: 168). If the goal of the analysis is to examine variation in the production of one or a few vowels only, as was the case in this study, then additional vowels need to be segmented and measured, a potentially problematic issue if time and resources are limited. The second drawback discussed by Thomas (2011: 168-9) and Clopper (2009: 1440-1) is that vowel-extrinsic normalisation procedures may result in skewed values if applied to individuals with different vowel systems, speaking different dialects or languages. This was a potentially serious problem for the present study, as the vowel systems of first-generation and second-generation migrants were impressionistically quite different.

Conversely, vowel-intrinsic, formant-extrinsic methods have been found to perform less well in factoring out anatomical differences between speakers while preserving sociolinguistic ones, but tend to be stronger in just those points where vowel-extrinsic, formant-intrinsic techniques are reported to have shortcomings: they do not require measurements of additional vowels and do not yield skewed results when speakers with different vowel systems are compared (Thomas 2011: 165). Because of these complementary advantages and disadvantages, I decided to test both types of procedures on my dataset in order to determine which worked best for this study. Three techniques were chosen for evaluation: Syrdal & Gopalø (1986) Bark difference method; Lobanovø (1971)

z-score normalisation; and Watt & Fabriciusø (2002) *S*-centroid procedure. The analysis was carried out in R (version 2.14.1; R Development Core Team 2011), a free, open-source software environment for statistical analysis and graphics, using the `norm.bark`, `norm.lobanov`, and `norm.wattfabricius` functions from the `vowels` package (Kendall & Thomas 2010). Since this package represents the backend of the NORM Suite, an online software for normalising and plotting vowel formant data, the implementation of the three normalisation procedures follows Thomas & Kendall (2011).

Syrdal & Gopalø (1986) Bark difference method is the most widely used vowel-intrinsic, formant-extrinsic normalisation procedure. As Clopper (2009: 1433) notes, ò[t]his normalization is based on the idea that the differences between  $f_0$  and  $F_1$ ,  $F_1$  and  $F_2$ , and  $F_2$  and  $F_3$  are fairly constant across talkers and, therefore, that difference scores can be used to normalize for talker differences.ö In this technique, the raw formant values in Hertz are first transformed into Bark units (which represent a closer approximation to how sounds are perceived by the human ear; see Clopper 2009; Watt et al. 2011). In Thomas & Kendallø (2011) implementation, conversion to Bark ( $Z$ ) is based on the following formula (Traunmüller 1997), in which  $F_i$  stands for the value of a given formant  $i$ :

$$9) \quad Z_i = 26.81 / (1 + 1960 / F_i) \pm 0.53$$

Differences between the Bark-transformed formant values are then calculated. Syrdal & Gopal (1986) used  $Z_3 \pm Z_2$  or  $Z_2 \pm Z_1$  to represent the front-back dimension of the vowel space and  $Z_1 \pm Z_0$  to represent vowel height. Thomas & Kendall (2011) also use  $Z_3 \pm Z_2$  for the front-back dimension but modified the original formula by replacing  $Z_1 \pm Z_0$  with  $Z_3 \pm Z_1$ , since the fundamental frequency ( $F_0$ ) is heavily affected by age. Given that the age of my East African Indian participants ranged from 17 to 80, the modified version of the Bark difference procedure also seemed better suited to this study.

The vowel-extrinsic, formant-intrinsic methods reported to work most effectively for sociophonetic research are Gerstmanø (1968) range normalisation; Lobanovø (1971) z-score procedure; Neareyø (1978) individual log-mean technique; as well as Watt & Fabriciusø (2002) *S*-centroid method and its various modifications (Adank 2003; Adank et al. 2004; Fabricius et al. 2009; Clopper 2009; Flynn 2011). For the present analysis, I resolved to test Lobanov (1971) and the modified version of the *S*-centroid procedure proposed by Fabricius et al. (2009) for the following reasons: unlike Gerstman (1968),



these methods were implemented in the `vowels` package; furthermore, they were both found to perform at least as well or better than Nearey (1978) in studies that covered all three techniques (Fabricius et al. 2009; Clopper 2009; Flynn 2011).

The Lobanov (1971) method consists of standardising the raw formant frequencies or, in other words, converting them into  $z$ -scores. These indicate how many standard deviations a particular value diverges from the group mean and are computed by subtracting the mean from the raw value and dividing the difference by the group's standard deviation (Gries 2009: 122). Thomas & Kendall (2011) implement the Lobanov procedure as follows:

$$10) F_{n[V]}^N = (F_{n[V]} - \text{MEAN}_n) / S_n$$

In this formula,  $F_{n[V]}^N$  represents the normalised frequency for formant  $n$  of vowel  $V$  ( $F_{n[V]}$ );  $\text{MEAN}_n$  the mean for formant  $n$  across all vowel tokens by a particular speaker; and  $S_n$  the standard deviation for formant  $n$  across all vowel tokens by that speaker. Like much recent work on vowel normalisation, this version of the  $z$ -score normalisation technique uses the standard deviation rather than the root mean square deviation, which was used in Lobanov's (1971) original formulation (Thomas & Kendall 2011).

The  $S$ -centroid procedure normalises the raw formant values of a speaker by expressing them as a ratio of the 'centre of gravity' of the speaker's vowel space (Watt & Fabricius 2002: 161-2). This centre of gravity or centroid  $S$  is computed as the grand mean of three 'point vowels' which represent the limits of that individual's vowel space: [i], the highest and frontest point with minimum F1 and maximum F2; [a], the lowest point with maximum F1; and [u], the highest and backmost point with minimum F1 and minimum F2 (Fabricius et al. 2009: 420). In the original version of the procedure introduced by Watt & Fabricius (2002), the mean F1 and F2 values of the FLEECE vowel were used to represent [i]; the mean F1 and F2 values of either TRAP or START, depending on which vowel was lower in the vowel space, were used to represent [a]; and [u] was derived from [i] as follows:  $F2[u] = F1[u] = F1[i]$  (see Watt & Fabricius 2002: 163-4 for more details on the definition of [u]). The  $S$ -centroid of a formant  $F_n$  is then computed as:

$$11) S(F_n) = (F_n[i] + F_n[a] + F_n[u]) / 3$$

In a final step, the raw formant values of the formant  $F_n$  are divided by the *S*-centroid value of that formant:  $F_n/S(F_n)$ .

Because the original algorithm tended to cause skewing of the lower part of the vowel space under certain conditions (Thomas 2011: 169; see also section 7.1.1.2), Fabricius et al. (2009) proposed a slightly modified version of the *S*-Centroid procedure. The 2009 algorithm differs from the 2002 formula in that it uses the mean of the F2 values of [i] and [u] to represent the F2 of [a], rather than the actual mean F2 value of TRAP or START. In the present study, I tested the modified version of the *S*-centroid technique, employing Thomas & Kendallø (2011) implementation of the method. This implementation differs from Fabricius et al. (2009) in that the computation of the *S*-centroid for a particular speaker is not (necessarily) based on the mean F1 and F2 values of FLEECE and the mean F2 value of TRAP/START for that individual, but on the values of whichever vowels in the dataset happen to have the highest and lowest mean F1 and the highest mean F2 for that speaker.

For the two vowel-extrinsic normalisation techniques to be effective, it was necessary to take formant measurements of additional vowels. As the nature of the data and sample size made this a rather time-consuming task, I restricted token selection to the FLEECE, TRAP and START vowels. The reasoning behind this decision was that, while it was uncertain whether the Lobanov method would perform well if only FLEECE, TRAP and START were added to the dataset, these vowels should at least have been sufficient for a successful application of the modified *S*-centroid technique (Fabricius et al. 2009: 431). Both TRAP and START were measured because the relative configuration of these two vowels varied considerably across individual speakers.<sup>9</sup> Employing the procedure described earlier for FOOT, STRUT and NURSE, I extracted the formant values of 1,705 FLEECE, TRAP and START tokens (see chapter 7, appendix I and appendix III) and normalised the enlarged dataset with the three algorithms chosen for evaluation. I then followed Clopper (2009: 1432) in assessing their relative performance through a visual inspection of the normalised and non-normalised data. This involved comparing plots of the normalised group means of first- and second-generation females and males to each other and to the raw group means in Hertz. The aim was to determine: 1) the extent to which the normalisation had succeeded in

---

<sup>9</sup> Watt & Fabricius (2002: 163) rightly point to the dangers of including START when speakers are rhotic. In the present study, this was not deemed to be very problematic because rhoticity levels were close to zero for the second generation and first-generation participants overwhelmingly realised postvocalic /r/ as a tap or trill and not as an approximant (see chapter 6).

improving the overlap between the vowel spaces of female and male speakers (and in equalising their areas; Fabricius et al. 2009); and 2) whether any artefacts had been created through the normalisation procedure. Based on these criteria, I found Lobanov's *z*-score transformation to be more suited to the present study than the Bark Difference method and the *S*-centroid procedure. I therefore used Lobanov-normalised data for the rest of the analysis (see chapter 7).

### 5.3.4 Coding the independent variables

In the regression analyses presented in chapter 7, I investigated the effects of three independent variables: vowel, generation and gender. In line with the main research questions of this thesis, the inclusion of the vowel and generation variables into the models enabled me to establish: 1) whether and how the production of each vowel differed across first- and second-generation speakers and 2) whether, for each generation, the FOOT-STRUT and STRUT-NURSE pairs exhibited a significant difference in phonetic quality and/or duration. Vowel was coded as a factor with the levels FOOT, STRUT vs. NURSE, and generation as a factor with the levels first vs. second (cf. section 5.1 on the classification criteria for generation). Due to its widely attested influence on patterns of language variation and change, gender (coded as a factor with the levels female vs. male) was also added as a fixed effect to the models.

No further linguistic or social constraints were included in the statistical analysis of the vowels. The reason for this decision was that, in contrast with the analysis of postvocalic /r/, where the large amount of existing research called for a more detailed examination of variation within the first generation, the goal of the acoustic analysis of FOOT, STRUT and NURSE was to provide a bird's eye perspective on the production of these vowels across the two generations. Note, in particular, that phonological environment was not included as a factor because, though likely to exhibit a significant correlation with the formant and duration values of the three vowels (cf. section 5.3.1), its effect was not of primary interest to the thesis and assumed to be constant across the four subgroups. Preceding and following segment were, however, coded phonemically in order to obtain a rough idea of their distribution, and the potential influence of coarticulation effects on the results is discussed in chapter 7.

## 5.4 Statistical analysis: mixed-effects modelling

For several decades, the variable rule program or VARBRUL, an implementation of multiple logistic regression (cf. section 5.4.1) specifically developed for the analysis of natural language data, has been one of the tools most widely used in variationist sociolinguistic research to evaluate the influence of multiple social and linguistic factors on linguistic variation (for introductions to this method, see Tagliamonte 2006 and Bayley 2002).<sup>10</sup> As Keith Johnson (2008: 174-75) notes, VARBRUL has been indispensable to the field because it was written at a time when most statistical packages did not offer logistic regression. From the point of view of present-day statistical standards, however, the most commonly employed version of VARBRUL, the GoldVarb series of programs (e.g. GoldVarb X and GoldVarb Lion; Sankoff et al. 2005; Sankoff et al. 2012), suffers from several limitations, discussed in detail by Daniel Ezra Johnson (2009). Relevant in the context of the present study is, in particular, that the program only allows for the analysis of binary data but not of continuous dependent variables such as vowel formants; that it does not permit the inclusion of continuous independent variables like age; and that it does not provide a direct means of testing for interactions between predictors.

A broader issue concerning not only GoldVarb and variable rule analysis but ordinary linear and logistic regression in general involves model assumptions (Johnson 2009).<sup>11</sup> Regression analysis assumes that individual tokens in a dataset are independent of each other. This has a direct bearing on sociolinguistic research because the independence assumption is seldom met in natural language samples, where observations tend to be grouped by speaker and lexical item. While it is likely that systematic differences exist between tokens coming from different speakers or from different lexical items, GoldVarb cannot take this type of variation into account. Speaker and lexical item in fact generally need to be excluded from the regression analysis because they are nested within the external/social and internal/linguistic factors considered.<sup>12</sup> As a consequence, their presence

---

<sup>10</sup> Note that there is an important difference between the terminology used by GoldVarb and that of most other statistical packages: GoldVarb's *øfactor groups* are usually referred to as *øfactors* in other programs, and GoldVarb's *øfactors* as *øfactor levels* (Johnson 2009: 361). In the present study, I will adopt the latter terms, referring to an independent variable such as gender as *øfactor* and to its subgroups (i.e. female and male speakers) as *øfactor levels*.

<sup>11</sup> Unless stated otherwise, the following discussion is based on Johnson (2009).

<sup>12</sup> As Johnson (2009: 380) notes, the term *ønested* refers to the fact that *øall* the observations for a given speaker have the same value for [an external factor such as] gender; likewise, all the observations for a given word may have the same value for an internal factor such as grammatical category or phonological context.

in the model makes these factors superfluous and leads the program to seriously underestimate their effects.

At the same time, though, the exclusion of speaker and lexical item from the model is also likely to have undesirable consequences. The first of these is that, especially in situations where there is considerable inter-speaker or inter-word variation, failing to consider such within-group variation will cause GoldVarb to overestimate the significance of external and internal factors, respectively. In these situations at least, the program will tend to have high Type I error rates or, in other words, mistake chance effects for real ones (cf. the tests with simulated data in Johnson 2009: 365 ff.). Furthermore, because GoldVarb averages over tokens, the program will not incorporate into the model fitting process characteristic patterns of speaker or word distribution, and if the data is unbalanced, speakers and words with a large number of tokens are likely to have an undue influence on effect size estimates.

Mixed-effects regression modelling is a relatively recent development in statistics which counters these problems by including two different types of factors in the model: fixed effects and random effects (see Baayen 2008: 241-302; Johnson 2008: 229-247, 259-265; Johnson 2009). Fixed effects are factors whose levels are fixed and repeatable across studies, while random effects are factors whose levels are randomly sampled from a bigger population and generally not repeatable across studies (Baayen 2008: 241). The first type, which usually constitutes the researcher's main interest, includes social and linguistic predictors such as gender, syllable stress or following phonological environment; examples of the second type are predictors like speaker and lexical item (Johnson 2009: 364-5; Baayen 2008: 241). In a mixed-effects (or mixed) model, the influence of fixed effects is estimated in terms of contrasts or differences between factor levels, just as in traditional regression analysis; for random effects such as speaker or lexical item, the model gives a single estimate of the degree of inter-speaker or inter-word variation (Johnson 2009: 242).

The distinction between these two types of factors enables the mixed model to assess the effect of social and linguistic predictors while simultaneously taking into account speaker- and word-specific differences. It will therefore still capture external [and internal] effects, but only when they are strong enough to rise above the inter-speaker [and inter-word] variation (Johnson 2009: 365), and thus be less prone to Type I errors, particularly when the sample is characterised by a high degree of inter-speaker or inter-word

variation.<sup>13</sup> Moreover, controlling for these individual differences leads to more accurate estimates of the predictors' effect sizes, especially  $\phi$  but not exclusively  $\phi$  when the data is unbalanced (cf. the tests with real data sets in Johnson 2009: 370 ff.).

For these reasons, I considered mixed-effects regression modelling to be a well-suited statistical method for evaluating the effects of external and/or internal predictors on the linguistic variables of the present study. Its assumptions were in better accord with the type of data used, grouped by speaker and lexical item, than those of ordinary regression analysis, which requires independence of observations. Moreover, the data was unbalanced across speakers (for the vowels only; cf. section 5.3) and words (for both the vowels and postvocalic /r/; cf. sections 5.3 and 5.2), and the production of both coda /r/ and the vowels was characterised by marked inter-speaker and inter-word variability (see chapters 6 and 7). As discussed in sections 5.4.1 and 5.4.2 below, two types of mixed-effects regression were employed in this study: generalised linear (logistic) mixed-effects regression modelling for postvocalic /r/, and linear mixed-effects regression modelling for the vowels.

Like the normalisation tests, the statistical analysis was carried out in R, using the `lmer` and `glmer` functions from the `lme4` package (Bates et al. 2011), which fit linear and generalised linear mixed-effects models. In addition to mixed-effects regression modelling, running the analysis in R had other advantages over GoldVarb: it also allowed for the analysis of the continuous vowel formant data, as well as the inclusion of age as a continuous predictor, and for the direct testing of interactions between the independent variables.

#### **5.4.1 Postvocalic /r/: generalised linear (logistic) mixed-effects modelling**

Generalised linear models are an extension of linear models based on maximum likelihood estimation<sup>14</sup> and suitable, for example, for the analysis of binary data (logistic regression), where the aim is to estimate the probability of a given outcome (e.g. head, or success, or regular, or direct object construction [as opposed to tail, or failure, or irregular, or prepositional object construction]) given the predictors (Baayen 2008: 195). Generalised

---

<sup>13</sup> While one of the advantages of mixed models is that they have lower Type I error rates in at least some situations, one of their disadvantages is that they sometimes tend to make more Type II errors, that is, to miss real effects in the data (see Johnson 2009).

<sup>14</sup> Maximum likelihood estimation uses iterative fitting techniques in order to select parameters such that, given the data and our choice of model, they make the model's predicted values most similar to the observed values (Baayen 2008: 195; see also Johnson 2008: 155-158).

linear mixed models extend this type of model to include not only fixed effects but also random effects (see Baayen 2008: 278-284; Johnson 2008: 259-265; Johnson 2009). In R, the `glmer` function fits generalised linear mixed models using the Laplace approximation (cf. Tuerlinckx et al. 2006).

For postvocalic /r/, the mixed-effects regression was carried out on the data of first-generation speakers only. This was because, while first-generation East African Indians showed considerable inter-speaker variability, the second generation was characterised by (near-)categorical non-rhoticity (see chapter 6). A generalised linear mixed model was fit to the first-generation subsample (11 speakers) with postvocalic /r/ as dependent variable; gender, age and following phonological environment as external and internal fixed effects, respectively; and speaker as well as lexical item as random effects. All interactions between fixed effects were also tested for. Furthermore, since for generalised linear mixed models the `glmer` function returns p-values for individual factor levels but not for factors as a whole, I followed Johnson (2009, 2010a) in evaluating the overall significance of fixed effects and their interactions via a likelihood ratio chi-squared test.<sup>15</sup> As Johnson (2010a) writes,

[i]f two logistic models are nested & fit to the same data, and one model is a subset or 'special case' of the other & then the difference in deviance can be tested against a chi-squared distribution with degrees of freedom equal to the difference in the number of parameters of the two models.<sup>16</sup>

For instance, to assess the significance of a factor such as gender, the model was refit without the predictor in question. Testing the difference between the deviances of the more complex and the new, simpler model against a chi-squared distribution then enabled me to determine whether the inclusion of gender significantly improved the explanatory power of the model. The likelihood ratio tests were carried out via the `anova` function in R. Lastly, the analysis presented in chapter 6 also differs from automated stepwise regression procedures such as GoldVarb's step-up and step-down algorithms in that I retained non-significant predictors in the model (cf. the discussion in Johnson 2010b). The only exception to this were non-significant interactions, which I removed from the model in order to obtain more accurate coefficient estimates for the main effects.

---

<sup>15</sup> This is also the procedure employed by GoldVarb (cf. Tagliamonte 2006). On the use of likelihood ratio tests to assess the significance of random effects, see Baayen (2008: 253-254).

<sup>16</sup> The deviance, a measure of goodness of fit, is -2 times the log-likelihood given in GoldVarb outputs; deviances closer to 0 indicate a better model fit (Johnson 2009: 381).

### 5.4.2 Vowels: linear mixed-effects modelling

Ordinary linear regression analysis estimates the effect of one or more independent variables on a continuous dependent variable by minimizing the sum of squared deviations of the observed values for the dependent variable from those predicted by the model (Hill & Lewicki 2006: 373). Linear mixed-effects models are an extension of linear models which includes both fixed and random effects (see Baayen 2008: 241-278, 284-295; Johnson 2008: 229-247; Johnson 2010a). In R, the `lmer` function fits this kind of model employing a method called relativised maximum likelihood (REML), also referred to as restricted or residual maximum likelihood (Baayen 2008: 246).

For the vowels, the mixed-effects regression was performed on the formant and duration data of both first- and second-generation speakers (except for speaker J and speaker F, see section 5.3). Three linear mixed models were fit to the sample (23 speakers), with Lobanov-normalised F1, Lobanov-normalised F2 and duration as response variables. The models included three fixed effects, vowel, generation and gender, as well as speaker and lexical item as random effects. As with postvocalic /r/, all interactions between fixed effects were tested for. If an interaction was found to be significant by the model, the data was split up into subsamples and parallel follow-up analyses were carried out on each subset (see section 7.1). I adopted this procedure because, when fixed effects are involved in a significant interaction, a direct interpretation of the coefficient estimates of the main effects becomes difficult and the origin of the interaction needs to be investigated instead (Gries 2009: 269-70; Baayen 2008: 166). As in the mixed-effects logistic regression carried out for postvocalic /r/, non-significant main effects were retained in the model.

Unlike the `glmer` function fitting generalised linear models, the `lmer` function does not return p-values for the factor levels of fixed effects. This is because there is as yet no generally-accepted method for calculating the degrees of freedom necessary for their computation (Baayen 2008: 247-8). I obtained p-values for factor levels via Markov chain Monte Carlo (MCMC) sampling, a method which simulates processes using random numbers (Hill & Lewicki 2006: 657). As Baayen (2008: 248) points out,

[e]ach MCMC sample contains one number for each of the parameters in [the] model. (í ) With many such samples, we obtain insight into what is called the POSTERIOR DISTRIBUTIONS of the parameters. On the basis of these distributions we can estimate *p*-values and confidence intervals known as HIGHEST POSTERIOR DENSITY (HPD) intervals.



This method was chosen as some of the follow-up analyses were run on smaller subsets of data, and MCMC sampling is suitable for both small and large datasets (Baayen 2008: 248). The sampling was carried out using the `pvals.fnc` (p-values) function from the `languageR` package (Baayen 2011). The overall significance of fixed effects and their interactions was assessed via likelihood ratio chi-squared tests (see section 5.4.1). Lastly, where appropriate p-values were adjusted with the Bonferroni correction (using the `p.adjust` function in R), which involves multiplying them by the number of comparisons made (or, conversely, dividing the conventional significance level of 0.05 by the number of comparisons). This was done to counter the well-known problem in statistical analysis that performing multiple comparisons on the same data increases the risk of committing a Type I error (Gries 2009: 241-243; Baayen 2008: 105-106).

## 5.5 Summary

In this chapter, I described the fieldwork procedure used to collect the data for the present study and the method employed to analyse it. I conducted sociolinguistic interviews with a group of first- and second-generation informants recruited via a common acquaintance. 25 speakers were selected for the analysis (23 for the vowels). Both the auditory analysis of postvocalic /r/ and the acoustic analysis of FOOT, STRUT and NURSE were based on conversational data. I pointed out that especially for the vowels this raises issues of comparability since many studies on the three input varieties are word-list based. These issues are looked into in chapter 7. I also discussed vowel normalisation. I touched on the difficulties of using raw formant data and presented the main advantages and disadvantages of two major types of normalisation procedures: vowel-intrinsic, formant-extrinsic and vowel-extrinsic, formant-intrinsic methods. I described the three techniques that are evaluated in chapter 7: Syrdal & Gopalø (1986) Bark difference method, Lobanovø (1971) z-score normalisation, and Watt & Fabriciusø (2002) S-centroid procedure. Lastly, the chapter also provided an introduction to mixed-effects regression modelling in which I argued that this kind of statistical technique is better suited to the present study than traditional regression modelling. The reason is that a mixed model can control for the fact that in the dataset used for this study tokens are grouped by speaker and lexical item, as they often are in sociolinguistic studies.

## 6. Results: postvocalic /r/

### 6.0 Introduction

Chapter 6 presents and discusses the results of a quantitative investigation into the production of postvocalic /r/ by first- and second-generation East African Indians in Leicester. The analysis is structured into two parts. In the first part (section 6.1), I examine variation at group level in order to determine, on the one hand, whether the use of coda /r/ by first-generation participants shows parallels to Indian English, East African English or East Midlands English and, on the other hand, whether patterns characteristic of the first generation are transmitted to the second generation. Two aspects of postvocalic /r/ are analysed to this purpose: its overall frequency in prepausal and preconsonantal position and the phonetic realisation of rhotic tokens. This is complemented by considerations on the occurrence of coda /r/ in word-final prevocalic contexts, i.e. linking /r/ and intrusive /r/. In the second part of the chapter (section 6.2), I focus on variable rhoticity within the first generation, carrying out a multivariate regression analysis in order to gain further insight into the factors that have influenced the migrants' speech.

### 6.1 Variation across generations

#### 6.1.1 Results

The total dataset across 25 speakers consists of 1,250 tokens of postvocalic /r/ in prepausal and preconsonantal position. Furthermore, 122 tokens of word-final prevocalic (linking) /r/ and 12 overt phonetic realisations of /r/ in intrusive /r/ contexts were also coded.<sup>1</sup> Table 6.1 and figure 6.1 show the proportions of rhotic and non-rhotic tokens (labelled as *õRö* and *õzeroö*, respectively) for each generation. First-generation speakers pronounce coda /r/ 19.3% of the time. With null realisations appearing in roughly four tokens out of five, the group as a whole clearly exhibits a tendency towards non-rhoticity. At the same time,

---

<sup>1</sup> As stated in section 5.2.2, both linking /r/ and intrusive /r/ were excluded from the main analysis and are discussed separately here. Unless stated otherwise, they are therefore not included in the overall figures for postvocalic /r/ presented in this chapter.

however, the frequency of rhotic variants is high enough as to deserve consideration, particularly when looking at cross-generational patterns.

Table 6.1 Production of postvocalic /r/ by generation (R= rhotic realisation, zero = null realisation; N = total number of tokens per generation).

generation	postvocalic /r/		N
	R %	zero %	
first	19.3	80.7	550
second	0.7	99.3	700

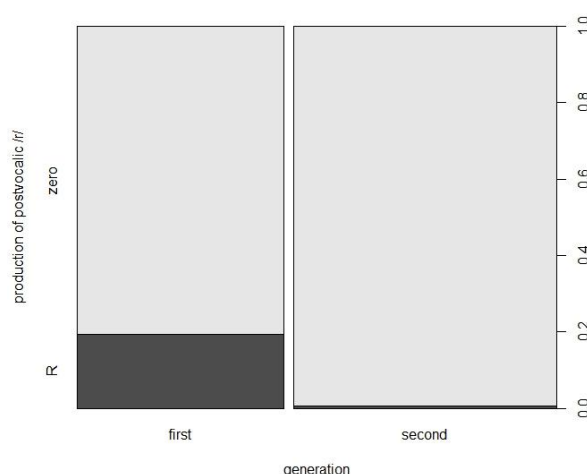


Figure 6.1 Production of postvocalic /r/ by generation (R= rhotic realisation, zero = null realisation).

Among second-generation speakers, postvocalic /r/ surfaces with an overt phonetic realisation in only five tokens out of 700 (0.7%). This difference between the generations is important not only because it is considerable in terms of frequency (amounting to almost 20%) but also because it is likely to be qualitative rather than quantitative, with the first generation displaying variable rhoticity and the second near-categorical non-rhoticity. This contrast is even more evident when considering variation across individual speakers within each group, and is suggestive in that it may be indicative of different underlying representations of postvocalic /r/ (see section 6.1.2.3).

In linking /r/ contexts, both first- and second-generation speakers exhibit a strong tendency to pronounce coda /r/. As shown in table 6.2 and figure 6.2, the frequency of rhotic tokens in this position surpasses 70% for both groups. At first sight at least, first- and second-generation participants also display the same constraint hierarchy for following phonological environment, with coda /r/ being articulated most commonly in word-final prevocalic contexts and least commonly in preconsonantal ones (for the first generation, see also section 6.2). It should be noted, however, that for second-generation informants the number of rhotic tokens in prepausal and preconsonantal position is very low (3 and 2, respectively). The apparent pattern of prepausal environments favouring rhoticity over preconsonantal ones may therefore very well be a chance effect for this group.

Table 6.2 Production of rhotic tokens by following phonological environment and generation (pc = preconsonantal, pp = prepausal, pv = prevocalic; N = total number of tokens per phonological environment and generation).

generation	following phon. environment					
	pc		pp		pv	
	%	N	%	N	%	N
first	14.9	444	37.7	106	70.3	37
second	0.3	576	2.4	124	77.6	85

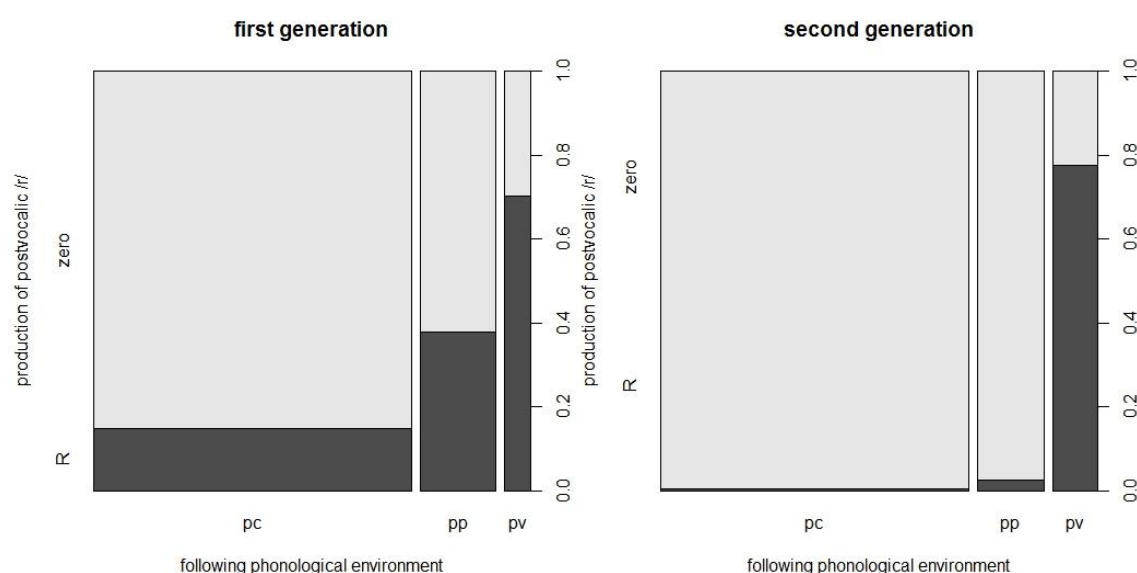


Figure 6.2 Production of postvocalic /r/ by following phonological environment and generation (pc = preconsonantal, pp = prepausal, pv = prevocalic).

What clearly emerges from figure 6.2 though is that the two groups are characterised by two fundamentally different patterns: while the first generation exhibits variable presence of postvocalic /r/ in all three environments, the second generation shows near-categorical absence of coda /r/ in preconsonantal and prepausal contexts and variable but frequent occurrence of rhotic variants in linking /r/ contexts. Rhotic variants are more common in linking /r/ contexts for the second generation (77.6%) than for the first (70.3%), but the difference is rather small. Finally, even if no more than a few tentative speculations can be made about intrusive /r/ in the present study (see section 6.1.2 below), it is also noteworthy that the 12 occurrences of unetymological word-final prevocalic /r/ were all produced by second-generation speakers.

An analysis of the phonetic realisation of rhotic tokens, the third aspect of postvocalic /r/ examined in this study, reveals that the use of different rhotic variants once again distinguishes the two generations. Of the 106 rhotic tokens of prepausal and preconsonantal coda /r/ produced by first-generation speakers, 102 are realised as a tap or trill (96.2%) and only four as an approximant (3.8%). The second generation displays the opposite trend, with two rhotic tokens realised as a tap or trill and three as an approximant. As noted above, though, caution is required in interpreting the result for the second generation due to the low number of 5 rhotic tokens in prepausal and preconsonantal position for this group. To increase the number of tokens and obtain somewhat more reliable evidence, I included linking /r/ tokens in the counts. Table 6.3 and figure 6.3 show that if this environment is considered as well, the difference between the two groups becomes even more striking: whereas the first generation still displays an overwhelming tendency towards the use of taps and trills (93.9%), the second generation exhibits a diametrically opposed, almost exclusive preference for approximants (93%).

Table 6.3 Phonetic realisation of rhotic tokens by generation (including linking /r/ tokens; N = total number of tokens per generation).

generation	rhotic tokens		
	taps and trills	approximants	N
first	93.9	6.1	132
second	7.0	93.0	71

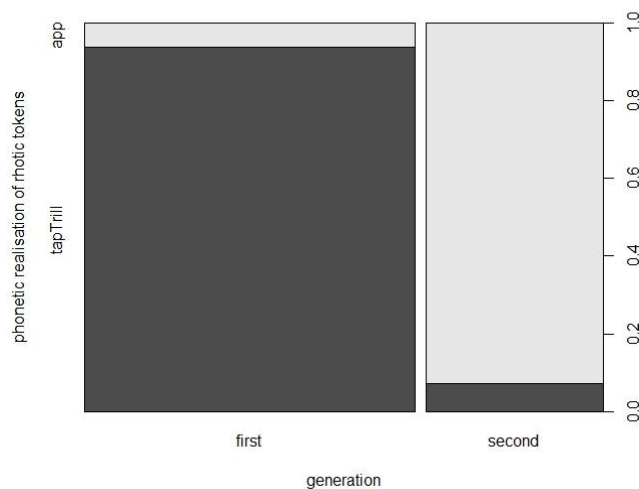


Figure 6.3 Phonetic realisation of rhotic tokens by generation (including linking /r/ tokens; tapTrill = taps and trills, app = approximants).

## 6.1.2 Discussion

### 6.1.2.1 First generation

A first observation worth making about the use of postvocalic /r/ by the first generation is that for this group of speakers, the dichotomy between rhotic and non-rhotic accents, which has been shown to be a crucial criterion in the classification of English varieties around the world (McMahon et al. 2007; Maguire et al. 2010; Schneider 2005, reported in Schneider 2007), does not hold. The categorisation of a speaker or group of speakers as rhotic or non-rhotic partly depends, of course, on the definition applied. For example, Sharbawi & Deterding (2010) considered their participants to be rhotic when they exhibited /r/-colouring in four or more tokens out of seven. In the present case, I adopt the position that with an average rhoticity level of 19.3% (and considerable variation across individual speakers; cf. section 6.2), the first-generation East African Indian participants of this study can be regarded as variably rhotic.

Although a rhoticity level of around 20% is comparably low, it sets the variety of English spoken by the first generation clearly apart from East African English and East Midlands English, which are both reported to be non-rhotic (on patterns of postvocalic /r/ in the three input varieties, see section 4.1.3). Parallels to the use of /r/-full variants by this group of speakers therefore have to be sought in Indian English, which, according to both qualitative and quantitative studies, is also variably rhotic (cf. section 4.1.3.1). Frequencies clearly have to be compared with caution across different studies, since they depend on many factors, including methodological choices (Tagliamonte 2006: 241). Nevertheless, one may note that the overall percentage of rhotic tokens produced by first-generation migrants is very similar to the casual speech score of 20.5% reported by Sahgal & Agnihotri (1988) for Delhi Indian English speakers who attended prestigious English-medium schools (whereas the other two groups included in the study, the average and vernacular-school informants, exhibited markedly higher rhoticity levels of 37.45% and 78.07%, respectively). Using a different method of data collection (word lists and other reading materials), Wiltshire & Harnsberger (2006) likewise found their Tamil and Gujarati English speakers to display a relatively low use of rhotic variants. The average frequency reported for the latter (17%) is particularly relevant to the present study, considering the preponderance of speakers from a Gujarati background among the participants. Considerably higher frequencies of rhotic variants are, however, attested for other groups of Indian English speakers. This includes, for instance, the rhoticity levels reported by Wiltshire (2005) for Tibeto-Burman L1 speakers, which ranged from 83% to 91%. Among Chandø (2010) New Delhi informants, percentage scores varied somewhat across the three generations (in informal style: 66% for students, 56% for workers, and 68% for retired speakers), but even the least rhotic group, the worker generation, was still much more /r/-full than the first-generation participants of the present study.

It is difficult to assess whether these differences in rhoticity levels are due to different methodological choices (note, however, that Wiltshire 2005 and Wiltshire & Harnsberger 2006 used the same method of data collection), or whether they may represent actual differences in the use of postvocalic /r/ across different types of Indian English speakers. If the latter were the case, a multiplicity of factors could be at work, none of which seems to account for all the differences on its own. On the one hand, in Indian English generally, lower rhoticity levels appear to be associated with higher education

levels and socioeconomic status. Recall that Bansal (1990) and Pingali (2009) consider the non-rhotic variety of Indian English to enjoy prestige in India, and that both Sahgal & Agnihotri (1988) and Chand (2010) identify null realisations as the Indian English prestige form. In Sahgal & Agnihotri (1988), the least rhotic group is the one who attended the most prestigious schools, and East African Indians of comparably high socioeconomic status may therefore likewise explain, at least in part, their tendency towards /r/-lessness.<sup>2</sup> On the other hand, the differences in rhoticity levels could also be related to regional-linguistic background and mother tongue influence, with speakers of Tibeto-Burman languages and those from the Hindi Belt (i.e. Hindi speakers from the Punjab and UP/Haryana, prevalent in Chand 2010) favouring rhotic variants more than Gujarati speakers (predominant in this study). Finally, the differences could also be due to contact with non-rhotic East African English or increased accommodation to non-rhotic East Midlands English on the part of first-generation East African Indians in Leicester, or to a combination of all these factors.

A comparison across diasporic settings reveals that the variable use of postvocalic /r/ by first-generation East African Indians resembles that of first-generation Indian migrants in the San Francisco Bay area, who also vary between /r/-full and /r/-less realisations of coda /r/ (Sharma 2005a).<sup>3</sup> At the same time, though, it strikingly contrasts with the non-rhoticity characteristic of the arguably most obvious candidate for comparison, namely South African Indian English (Mesthrie 1992). It seems likely that this difference is at least in part related to the distinct sociolinguistic histories of the two varieties, that is, to the fact that the dialect spoken by first-generation East African Indians remained a second-language variety, whereas South African Indian English underwent a shift from L2 to L1 (Mesthrie 1992, 2004b; see section 2.2).

While East African Indians' use of postvocalic /r/ in prepausal and preconsonantal position can be fruitfully compared to its occurrence in Indian English, East African English and East Midlands English, such a comparison is more difficult for linking /r/ and intrusive /r/. It is beyond doubt that, with an average frequency of 70.3%, first-generation participants show a strong tendency to pronounce word-final etymological /r/ when followed by a vowel. Overt phonetic realisations of /r/ in this position are, however, not

---

<sup>2</sup> Note, though, that Chand (2010) informants also came from an upper middle class background.

<sup>3</sup> A direct comparison of rhoticity levels across the two studies is unfortunately not possible because, as mentioned in section 5.2.2, Sharma (2005a) conflated (Indian English) trills and zero realisations in order to contrast them with (American English) approximants, whereas this thesis examines the use of rhotic vs. non-rhotic variants.



only expected in a (variably) rhotic English dialect but also very widespread in non-rhotic native varieties (see section 4.1.2). Their high frequency among first-generation East African Indians therefore does not really help to shed light on the relative influence of East Midlands English and Indian English on the migrants' speech. The case is even less clear for the third input variety. While linking /r/ has been claimed to be uncommon in non-rhotic L2 varieties, no information about the occurrence of this phenomenon in East African English seems to be available (cf. section 4.1.3.2).

With regard to intrusive /r/, one has to bear in mind that, since no quantitative analysis of this phenomenon was undertaken, its non-occurrence among first-generation speakers (as opposed to the second generation) may simply be due to a lack of appropriate contexts in which overt phonetic realisations of unetymological word-final /r/ may surface. It would not be surprising, however, to find that intrusive /r/ is altogether absent from the speech of first-generation East African Indians, since the phenomenon is generally claimed to be characteristic of non-rhotic accents only (see e.g. Trudgill 1999; Hughes et al. 2005; but cf. Hay & Sudbury 2005; Barras 2010 for two notable exceptions). No more than a few tentative suggestions can be made about these phenomena in the present study, but patterns of occurrence of linking /r/ and intrusive /r/ present an interesting (and insufficiently explored) avenue for further research, both within this community and in the three input varieties.

More insight into possible parallels between the speech of first-generation East African Indians and the input varieties may be gained by examining the phonetic realisation of rhotic tokens. As discussed in section 4.1.3, taps, trills and approximants are all attested in three input varieties, either in prevocalic or non-prevocalic position. Both Indian English and East African English display alternation between these variants, including varieties of Indian English in the diaspora such as South African Indian English (Mesthrie 2004b) and the dialects spoken by first-generation Indian migrants in the San Francisco Bay area (Sharma 2005a), first-generation Bengali migrants in London (McCarthy et al. 2011), as well as some second-generation Punjabi-English bilinguals in London (Hirson & Sohail 2007; see below). On the other hand, approximants are the predominant realisation in English dialects of England.

The overwhelming preference for taps and trills exhibited by first-generation East African Indians (96.2% if word-final prevocalic contexts are excluded and 93.9% if they

are included) therefore clearly does not follow English English patterns. If one considers variation within Indian English, especially as relating to regional-linguistic background, a striking parallel emerges. Recall from section 4.1.3.1.2 that while some Indian English subjects were reported to produce approximant variants of /r/ most frequently (e.g. Tibeto-Burman speakers of Indian English, Tamil English speakers, and Delhi Indian English speakers; Wiltshire 2005; Wiltshire & Harnsberger 2006; Chand 2010), Gujarati English speakers were found to use taps most often, followed by trilled and approximant realisations (Wiltshire & Harnsberger 2006). Considering that the first-generation participants of the present study are predominantly from Gujarati backgrounds, it therefore seems plausible to conclude that, like their variable rhoticity, their strong tendency towards taps and trills points to affiliation with Indian English patterns. Once again, influence from East African English cannot be ruled out, though, and it is possible that it may have had a reinforcing effect on this group's use of taps and trills.

### **6.1.2.2 Second generation**

The results presented in section 6.1.1 show that, while for first-generation East African Indian speakers the rhotic vs. non-rhotic dichotomy is untenable, for second-generation speakers it does hold, since, with an overall percentage of rhotic tokens of 0.7%, this group is indeed (almost) categorically /r/-less. The contrast between the first generation's variable behaviour and the second generation's lack of variability is all the more striking because it is a qualitative rather than quantitative difference, which is suggestive of different underlying representations of postvocalic /r/ (see section 6.1.2.3). As second-generation participants have been raised in Leicester and have clearly not adopted the variable rhoticity patterns of their parents' generation, the most likely explanation of their /r/-lessness is accommodation to non-rhotic East Midlands English.

Non-rhoticity as a result of accommodation to a local English dialect was also reported for another second-generation South Asian group in the UK, namely the British-Asian identified Punjabi-English bilinguals who took part in Hirson & Sohail's (2007) study. Even though there are obvious differences between the two speaker groups in terms of their parents' regional-linguistic origins (Punjabis from South Asia vs. Gujaratis from East Africa), of where participants themselves grew up (London vs. Leicester), and of

fluency in the heritage language (see below), they are similar in that they were born and raised in a non-rhotic region of the UK. Furthermore, like Hirson & Sohail's British-Asian identified informants, the second-generation speakers of the present study almost invariably defined themselves as British-Asian (see section 3.3). This is noteworthy because in Hirson & Sohail's (2007) study, the Punjabi-English bilinguals who identified as Asians were found to have rhotic accents.

With regard to the occurrence of linking /r/, I have shown that the frequency of rhotic variants in word-final prevocalic position is higher for the second generation than the first but that the difference is not very large (77.6% vs. 70.3%). One may therefore argue that both groups exhibit (on the surface at least) essentially the same pattern, that is, a marked preference for overt phonetic realisations of /r/. Whether second-generation speakers have adopted this tendency from their parents' generation is, however, an open question, since the frequent occurrence of rhotic variants in this environment is also attested in most non-rhotic native varieties of English, including many northern English dialects (cf. sections 4.1.2 and 4.1.3.3). Although no conclusions can be drawn about their frequency, the 12 occurrences of unetymological word-final, prevocalic /r/ which were noted among second-generation participants are remarkable because their presence ties in well with the speakers' near-categorical non-rhoticity, confirming previous claims that intrusive /r/ is characteristic of /r/-less varieties (see e.g. Wells 1982; Trudgill 1999; Hughes et al. 2005). It may thus be speculated that second-generation East African Indians have adopted this phenomenon from the local English dialect rather than from the first generation – a hypothesis which could be fruitfully investigated in a follow-up study, by employing, for instance, reading and elicitation tasks such as those used by Barras (2010).

Like the absence of postvocalic /r/, the second generation's preference for approximant realisations of rhotic tokens (93% including tokens in word-final prevocalic position) indicates that, rather than affiliating with the first generation's tendency towards tapped and trilled forms, this group has accommodated to local British English usage. Their propensity to use approximant variants of /r/ parallels a similar tendency reported for two groups of second-generation British Asians in London: Hirson & Sohail's (2007) British-Asian identified Punjabi-English bilinguals, who were found to display less variation in the phonetic realisation of /r/ than Asian-identified participants, and McCarthy et al.'s (2011) Bengali subjects, whose consistent use of approximant /r/ sharply contrasted with the wide

range of rhotic variants exhibited by late first-generation migrants. Like second-generation East African Indians, both groups had thus accommodated to local (in their case, southeastern) English English patterns.

The similarity to Hirson & Sohailø (2007) British-Asian identified informants is particularly intriguing as it suggests that group affiliation and identification with Britain may play a role in the adoption of non-rhoticity and approximant realisations by the second-generation speakers of this study. It needs to be considered, however, that their production of postvocalic /r/ may be affected by a number of other factors. For instance, proficiency in Gujarati varied greatly across individuals within this group, so that transfer effects may be less marked than for Hirson & Sohailø (2007) participants, who were all fluently bilingual and habitually used Punjabi at home (but see section 8.2.2). Furthermore, as discussed more fully in chapter 8, differences in socioeconomic status may also explain the differences in linguistic behaviour found between second-generation East African Indians and locally-born speakers of other British Asian communities.

### **6.1.2.3 First and second generation compared**

The different strands of evidence presented above reveal a very different overall picture for the two generations of East African Indians. For first-generation speakers, the results confirm previous qualitative and quantitative work on Indian English postvocalic /r/ and suggest that, at least as far as this variable is concerned, this group has maintained Indian English patterns: their variable rhoticity is also attested in most varieties of Indian English, both on the subcontinent and in diasporic contexts (with the notable exception of South African Indian English), but not in East African English or East Midlands English; and their relatively low average rhoticity level resembles those reported for groups of Indian English speakers from similar socioeconomic and/or regional-linguistic backgrounds (but cf. Chand 2010), as does their propensity towards tapped and trilled realisations of rhotic tokens. Without real-time data, it is difficult to assess whether and to what extent accommodation to the other two non-rhotic input varieties may have taken place for this group. What can be said, though, is that influence from East African English is unlikely on sociohistorical grounds (see section 8.2) and that, if accommodation to East Midlands English has taken place, it can only have been partial, since first-generation East African

Indian speakers' use of postvocalic /r/ is still distinctive from local British patterns, despite their having lived in the country for decades. Their characteristic use of this variable does not appear, however, to have been transmitted to the next generation: second-generation East African Indian speakers' almost categorical non-rhoticity, as well as their use of intrusive /r/ and clear preference for approximant variants of rhotic tokens, indicates that this group has accommodated to the local variety of British English instead.

Although a phonological analysis of postvocalic /r/ is not among the goals of this thesis, it is worth noting that, according to the most commonly proposed theory of English /r/-sandhi phenomena (cf. section 4.1.2), the two generations may differ not only in their surface use of postvocalic /r/ but also in their underlying phonological representations of this variable and in the processes by which it surfaces. The differences between the two groups may in fact be plausibly explained by an R Dropping and R Insertion model, respectively (Wells 1982). Following this view, first-generation speakers would still have an underlying postvocalic /r/ in their phonological system, which they variably delete in the appropriate phonological environments, i.e. in prepausal and preconsonantal (and at times word-final prevocalic) position. Such an underlying /r/ would, however, have disappeared from the phonological system of second-generation informants, who consequently do not pronounce postvocalic /r/ when followed by a pause or consonant but (variably) insert it in word-final position when followed by a vowel, including environments where /r/ is not historically present (intrusive /r/). While this is not the place for a detailed discussion of phonological theories on postvocalic /r/, it seems uncontroversial that the two generations strikingly diverge in their use of this variable. As the second part of chapter 6 shows, they also differ in another aspect which has not been considered in detail yet: inter-speaker variability.

## **6.2 Variation within the first generation**

In this section, I briefly discuss the amount of inter-speaker variability in the use of rhotic tokens exhibited by each generation and then move on to a more detailed examination of variation within the first generation (since variation within the second generation is negligible). The analysis seeks to establish whether such variation is subject to the same kind of constraints as those affecting the occurrence of postvocalic /r/ in Indian English

and, more generally, in other varieties of English. To this end, I examine the effect of three independent variables on the occurrence of coda /r/ among first-generation speakers through a distributional and multivariate regression analysis. The three variables are following phonological environment, gender and age. These predictors were chosen because their influence on postvocalic /r/ has amply been demonstrated in previous research (see section 4.1.3.1), and/or because they appeared to constrain the use of this variable in the present sample. Note that I only consider variation in the frequency of occurrence of coda /r/ in prepausal and preconsonantal position here. Due to the low number of 37 word-final prevocalic tokens for the first generation and to this group's lack of variability in the use of different rhotic variants (cf. section 6.1), neither linking /r/ patterns nor the phonetic realisation of rhotic tokens are examined at individual level.

### **6.2.1 Results**

An inspection of the rhoticity levels of individual speakers reveals, once again, a stark contrast between the two generations of East African Indians (see table 6.4 and figure 6.4). Considering that the second generation displays an average frequency of rhotic tokens of 0.7%, it is not surprising that inter-speaker variability is close to zero for this group, with percentage scores of individual participants ranging from 0% to 2%.

Table 6.4 Percentage of rhotic tokens by speaker (R = rhotic realisation; N = 50 tokens per speaker).

first generation		second generation	
speaker	R %	speaker	R %
S	0	C	0
G	2	H	0
T	6	L	0
W	8	M	0
K	12	Q	0
J	14	R	0
X	14	U	0
I	26	V	0
N	26	Y	0
E	52	A	2
F	52	B	2
		D	2
		O	2
		P	2

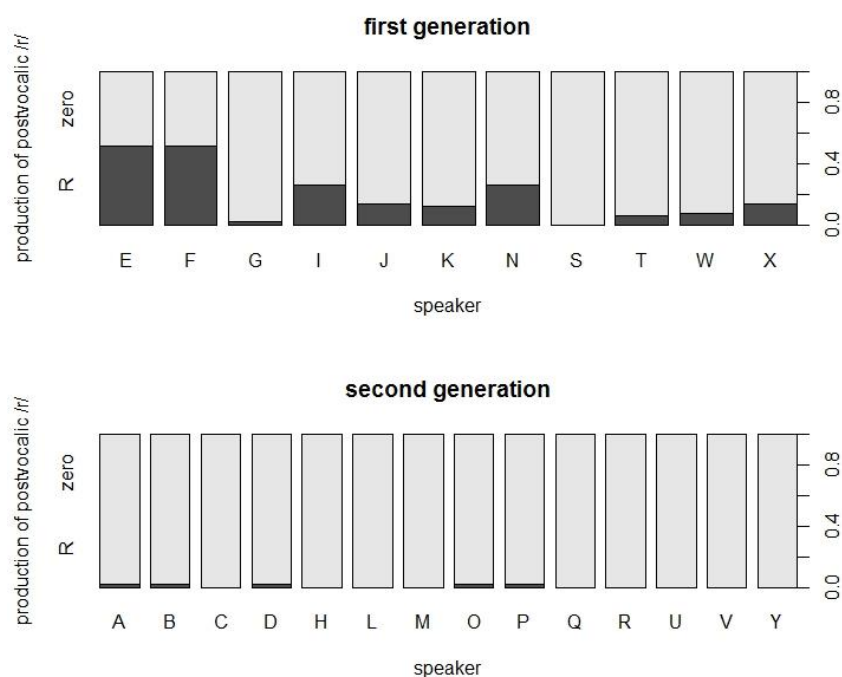


Figure 6.4 Production of postvocalic /r/ by speaker (R = rhotic realisation, zero = null realisation; N = 50 tokens per speaker).

In contrast, among first-generation informants the frequency of rhotic tokens varies from 0% to 52%. If one classified subjects with percentage scores over 50% as rhotic (as in Sharbawi & Deterding 2010), then the present sample would include both categorically or near-categorically /r/-less speakers (speaker S and speaker G) and rhotic speakers (speaker E and speaker F). Beyond such categorisation issues, it is clear that the occurrence of postvocalic /r/ varies much more across individuals within the first generation than within the second.

These diverging patterns raise the question as to which sources of influence constrain the variability found within the first generation. In section 6.1, I showed that for this group there is a clear correlation between the frequency of occurrence of rhotic tokens and the type of following phonological environment, with coda /r/ being articulated considerably more often in prepausal contexts than in preconsonantal ones (37.7% and 14.9%, respectively; see table 6.2 and figure 6.2).<sup>4</sup> In the following, I also explore the influence of two social predictors which appear to have a very different effect on the pronunciation of postvocalic /r/ by first-generation speakers: gender and age. As regards the former variable, table 6.5 and figure 6.5 reveal that female participants exhibit a somewhat higher percentage score of overt phonetic realisations of coda /r/ (21%) than their male counterparts (17.2%). While this pattern runs counter to those attested in previous work on Indian English postvocalic /r/ (Sahgal & Agnihotri 1988; Chand 2010; see below), the gender difference in rhoticity levels is rather small in the present sample (3.8%).

---

<sup>4</sup> As discussed earlier, rhotic realisations of postvocalic /r/ are even more common in word-final prevocalic position. Since I did not include linking /r/ tokens in the overall comparison of the frequency of coda /r/ across the two generations, however, consistency led me to exclude them from the distributional and statistical analyses presented in this section as well. In any case, the inclusion of word-final prevocalic tokens does not greatly change the results: the only noteworthy difference is that the effect size of following phonological environment is somewhat increased in the regression analysis.



Table 6.5 First-generation speakers' production of postvocalic /r/ by gender (R = rhotic realisation, zero = null realisation; N = total number of tokens per gender).

gender	postvocalic /r/		N
	R	zero	
female	21	79	300
male	17.2	82.8	250

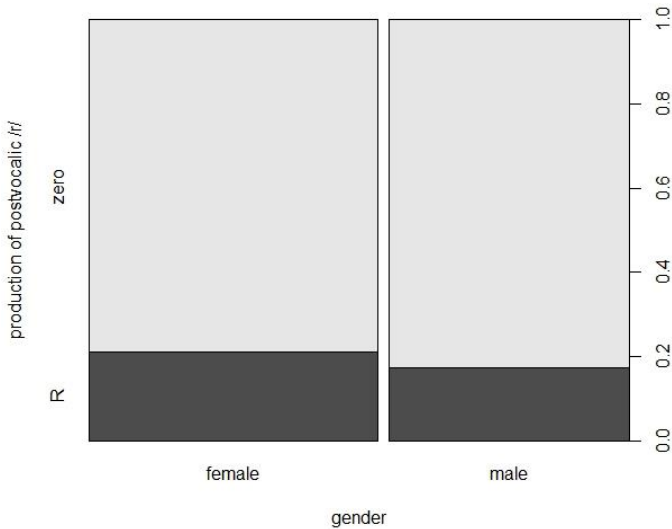


Figure 6.5 First-generation speakers' production of postvocalic /r/ by gender (R = rhotic realisation, zero = null realisation).

In contrast, for first-generation East African Indian speakers there is a clear positive correlation between rhoticity levels and age: older participants tend to use rhotic variants much more frequently than their younger counterparts (see figure 6.6). It seems that a rough dividing line can be drawn around the age of 65, as speakers younger than this age display noticeably lower percentage scores (14% or lower) than speakers aged 65 or above (26% or higher).

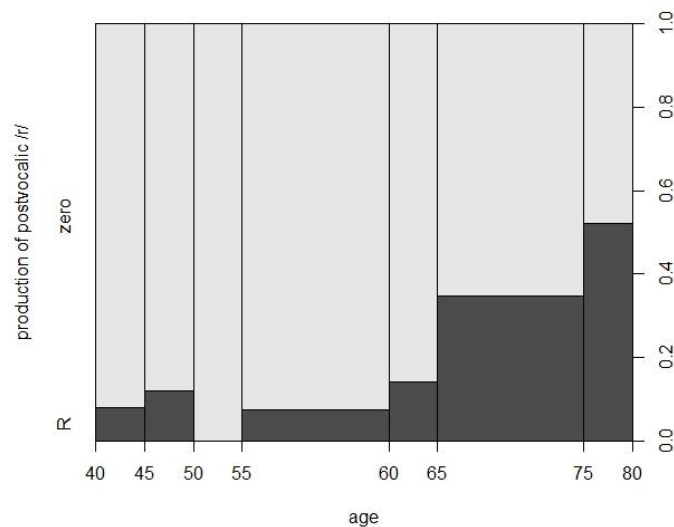


Figure 6.6 First-generation speakers' production of postvocalic /r/ by age (R = rhhotic realisation, zero = null realisation).

The significance of these patterns was tested with a logistic mixed-effects regression analysis (cf. section 5.4). Table 6.6 shows the mixed model estimating the influence of the three predictors on the occurrence of postvocalic /r/ among first-generation East African Indians. As described in section 5.4.1, speaker and lexical item were included as random effects and the four interactions between the fixed effects (i.e. the three-way interaction between following phonological environment, gender and age, as well as the three two-way interactions between these variables) were also tested. Since none of the interaction terms resulted being statistically significant, they were removed from the model.

Table 6.6 Results of the mixed-effects logistic regression analysis estimating the effects of following phonological environment, gender and age on first-generation East African Indians' production of rhotic tokens.

<b>Generalised linear mixed model fit by the Laplace approximation</b>				
<b>Model fit statistics</b>				
deviance				414.517
log likelihood				-207.258
df				6
<b>Total N</b>				550
<b>Random effects</b>				
	<b>Variance</b>	<b>Std. Dev.</b>	<b>N</b>	
lexical item	1.961	1.400	215	
speaker	0.738	0.859	11	
<b>Fixed effects</b>				
	<b>Estimate</b>	<b>Std. Error</b>	<b>z value</b>	<b>p<sup>5</sup></b>
intercept	-10.145	1.924	-5.274	< 0.001
follow. phon. environment: prepausal	1.776	0.399	4.450	< 0.001
age: +1	0.119	0.028	4.174	< 0.001
gender: male	-0.029	0.631	-0.046	0.964
<b>Overall significance of fixed effects*</b>				
	<b>Chisq</b>	<b>Chi Df</b>	<b>p</b>	
follow. phon. Environment	18.413	1	< 0.001	
age	10.334	1	0.001	
gender	0.002	1	0.964	

\*assessed via likelihood ratio chi-squared tests

Like ordinary logistic regression, a mixed-effects logistic regression analysis provides three lines of evidence about fixed effects that can be used in the interpretation of the results (adapted from Tagliamonte 2006: 235 ff.): 1) overall statistical significance; 2) relative strength or effect size; and 3) constraint hierarchy of factor levels within each factor or, for continuous predictors, direction of the effect.

Insight into the first type of evidence may be gained by examining the second part of table 5.6, which reports the results of the likelihood ratio chi-squared tests conducted to

<sup>5</sup> In generalised linear mixed models, the p-values in this column are obtained via Wald tests and indicate whether the coefficient values of the factor levels listed are significantly different from 0 (i.e. the default factor level, which is not shown). While not of direct concern here, these p-values are relevant in the regression analysis of the vowels in chapter 7.

evaluate the overall significance of the model's fixed effects. The three independent variables are clearly ranked in terms of statistical significance. Following phonological environment emerges as a highly significant predictor of rhotic variants ( $p < 0.001$ ), followed by age ( $p = 0.001$ ). Gender, on the other hand, has evidently no significant effect on the production of rhotic tokens ( $p = 0.964$ ). This is not very surprising considering that postvocalic /r/ displays a distinct stratification by age and a much larger difference in percentage scores between prepausal and preconsonantal contexts (22.8%) than between female and male speakers (3.8%). As discussed below, however, it also needs to be considered that statistical significance depends on sample size and that the dataset used for the present multivariate analyses is rather small.

The first part of table 6.6 contains the output of the mixed-effects logistic regression analysis performed by the `glmer` function, which provides information about Tagliamonte's second and third lines of evidence (i.e. the relative strength of the three fixed effects and the constraint ranking of factor levels or direction of the effect), the amount of variation due to the random effects, and the overall model fit. There are several differences in the way in which GoldVarb and most other statistical packages performing multiple logistic regression, including the `glmer` function, present the results (Johnson 2009: 360–62). Two of these are explained here in order to facilitate interpretation of the table.<sup>6</sup> The first difference concerns the coefficient units: whereas GoldVarb uses factor weights or probabilities, the `glmer` function returns coefficient estimates in log-odds. Log-odds (or logits) are 'the natural (base  $e$ ) logarithm of the odds, where the odds are the probability of an event occurring, divided by the probability of it not occurring' (Johnson 2009: 361). While probabilities or factor weights range from 0 to 1, log-odds range from negative to positive infinity. Because coefficient estimates of continuous predictors (here: age) can only be expressed in log-odds, this is the main unit I use to discuss the results (though where possible, I add the corresponding factor weights as a reference).<sup>7</sup>

The second difference involves the way in which the effects of categorical predictors or factors are presented. While GoldVarb's method closely resembles sum contrasts, 'where each coefficient represents a deviation from the mean' (Johnson 2009:

<sup>6</sup> This information is presented here, rather than in chapter 5, so that it is immediately available for reference.

<sup>7</sup> Log-odds can be converted into probabilities via the inverse logistic transformation:  $p = e^x / (1 + e^x)$ . The reason why the coefficient estimates of continuous predictors are expressed in log-odds only is that '[t]here is no logical way to report the effect of a continuous predictor in terms of factor weights, because a fixed log-odds increase does not always correspond to the same increase in probability' (Johnson 2009: 379).

361), the `glmer` function's default setting is treatment contrasts, which I also use in the present study.<sup>8</sup> In this method, one level of each factor (in R, the one coming first in alphabetical order) is selected as the reference or default level and assigned a coefficient value of 0; the other levels are then assigned coefficient values which represent the difference of each level from the reference level (Baayen 2008: 102-103). In the `glmer` output, only the non-default levels (here: prepausal, male) are shown. The default levels (preconsonantal, female) are not listed separately but combined in the model's intercept, which represents the probability predicted when all predictors assume their reference level (Johnson 2010a).

The log-odds coefficient estimates in table 6.6 give insight into both the relative strength of the three predictors and their internal constraint hierarchies or the direction of the correlation, with positive values indicating an increase in probability and negative values a decrease in probability (Baayen 2008: 198). With regard to the former, the coefficient estimates suggest that the effect size of following phonological environment (1.776) is considerably larger than that of gender (0.029), which is close to zero.<sup>9</sup> The relative strength of the two factors is therefore in line not only with the trends emerged from the distributional analysis but also with the p-values obtained for them. It is more difficult to directly compare the effect size of these categorical predictors to that of age, since for continuous predictors, the `glmer` function estimates the probability of rule application for a one-unit increase of the independent variable: for each year older a speaker is, the likelihood of the response increases by a particular amount (Johnson 2009: 362). If one considers, though, that a yearly increase of 0.119 log-odds corresponds to a difference of 1.19 log-odds between, say, 50- and 60-year-old speakers, the effect size of age seems rather large, and confirms both the clear graphical stratification of rhotic tokens by age and the very significant p-value obtained for this predictor.

An examination of the third kind of evidence, the internal constraint hierarchy or direction of the effect of predictors, likewise corroborates the distributional patterns

---

<sup>8</sup> I use treatment contrasts out of consistency here, since this method proved to be more practical for the multivariate analysis of the vowels (see chapter 7).

<sup>9</sup> According to Tagliamonte (2006: 242), the relative strength of a factor is represented by the range from the highest factor weight to the lowest factor weight. In a treatment-contrasts model, this corresponds, for a binary factor, to the (absolute) coefficient value of the non-default level. Translated into centred factor weights, the log-odds values reported above correspond to a range of 0.417 for following phonological environment and 0.007 for gender.

discussed earlier. As regards following phonological environment, the positive coefficient value for prepausal contexts (1.776) indicates that coda /r/ is more likely to be pronounced in prepausal position than in preconsonantal environments, the default level. For gender, the negative value for males (-0.029) suggests that male speakers are slightly less rhotic than female speakers (but the lack of statistical significance indicates that this pattern may very well be due to chance) and for age, the positive coefficient estimate (0.119) points to a positive correlation between rhotic variants and age: the older participants are, the greater the probability of their producing overt phonetic realisations of postvocalic /r/.<sup>10</sup>

In addition to Tagliamonte's three lines of evidence, a mixed-effects regression analysis provides a fourth type of information not included in ordinary linear and logistic regression. The mixed model also gives an estimate of the variance and standard deviation of the grouping factors (the random effects), that is, of the amount of variation that remains among individual speakers and words after considering the influence of the fixed effects (Johnson 2010a). Two aspects of the random effect parameters are examined here. Firstly, a likelihood ratio chi-squared test shows that the inclusion of both speaker and lexical item is justified: the model including both random effects fits the data significantly better than the same model without speaker ( $\text{Chisq} = 14.252$ ,  $\text{df} = 1$ ,  $p < 0.001$ ) or the same model without lexical item ( $\text{Chisq} = 12.227$ ,  $\text{df} = 1$ ,  $p < 0.001$ ).<sup>11</sup> This supports Johnson's (2010a) position that 'such terms should always be included in the model, if the structure of the data calls for them.'

Secondly, compared to the estimates of the difference between prepausal and preconsonantal contexts (1.776) or, say, between 50- and 60-year-old speakers (1.19), the standard deviations estimated for the two random effects (0.859 for speaker and 1.4 for lexical item) are relatively high. These values therefore suggest that, beyond the variation accounted for by the fixed effects, patterns of occurrence of postvocalic /r/ still differ considerably across individual speakers and, even more so, across individual words. For lexical item in particular, the high standard deviation value could partly be related to the methodological choice of restricting the selection of individual words to three tokens per type: this limit led to a more diverse lexical sample in which many items occur only once

---

<sup>10</sup> Translated into GoldVarb terminology, the log-odds of the categorical predictors correspond to the following centred factor weights (derived from the sum-contrasts coefficient estimates): 0.708 for prepausal contexts, 0.292 for preconsonantal contexts, 0.504 for female speakers and 0.496 for male speakers.

<sup>11</sup> Following Baayen (2008: 253-54), the statistical significance of the two random effect parameters is evaluated with the same procedure as the one used for fixed effects (see section 5.4.1).

and thus display percentage scores of either 0% or 100%. A high amount of variability across individual speakers and lexical items can also indicate, however, that variation in the use of postvocalic /r/ is constrained not just by the predictors considered in the regression analysis but also by linguistic and/or social factors that were not included in the model, say, preceding vowel, first language, educational level, or ethnic orientation. This issue is further discussed in section 6.2.2.

Before proceeding to a discussion of these results, the model's assumptions and overall fit to the data require some consideration. Gries (2009: 305) notes that, leaving the independence of observations aside (cf. section 5.4), the most important step in assessing whether a logistic model's assumptions are met is checking for overdispersion. This term designates 'the condition in which the variance of an observed dependent (response) variable exceeds the nominal variance [i.e. the variance predicted by the model], given the respective assumed distribution' (Hill & Lewicki 2006: 681). For logistic mixed models fit with the `glmer` function, checking for overdispersion involves looking at the estimated scale, which is 'the square root of the penalized residual sum of squares divided by n, the number of observations' (Bates 2010). The estimated scale of the present model is 0.772, which is somewhat lower than the ideal value of 1 but still falls within the acceptable range.

Baayen (2008: 204, 281) discusses two measures which can be used to assess the goodness of fit of a logistic mixed-effects model: C, 'an index of concordance between the predicted probability and the observed response' and Somers'  $D_{xy}$ , 'a rank correlation between predicted probabilities and observed responses'. The values obtained for the present model ( $C = 0.947$  and  $D_{xy} = 0.895$ ) indicate that it represents a good fit to the data.<sup>12</sup> Finally, the model's predictive power can also be evaluated graphically by splitting the range of possible predicted probabilities (i.e. 0 to 1) into a predetermined number of bins of equal size (here: 12) and plotting the mean predictions of each bin against the corresponding observed proportions of rhotic tokens (see Baayen 2008: 281-82). Figure 6.7 reveals that, especially in the higher probability range, the predicted mean values tend to be lower than the observed proportions. Overall, however, the points are reasonably close to the line (which, in an ideal case, they would fit perfectly). This is corroborated by the fact that there is a very high correlation between the X and Y values of the plot (R-squared =

---

<sup>12</sup> The two values were computed with the `somers2` function from the `Hmisc` package (Harrell 2012). As Baayen (2008: 204) points out, for C, a value of 0.5 indicates randomness, a value of 1 perfect prediction and values above 0.8 a good fit; for Somers'  $D_{xy}$ , 0 indicates randomness and 1 perfect prediction.

0.94). One may therefore conclude that the main logistic regression assumption is met and that the model fits the data sufficiently well.

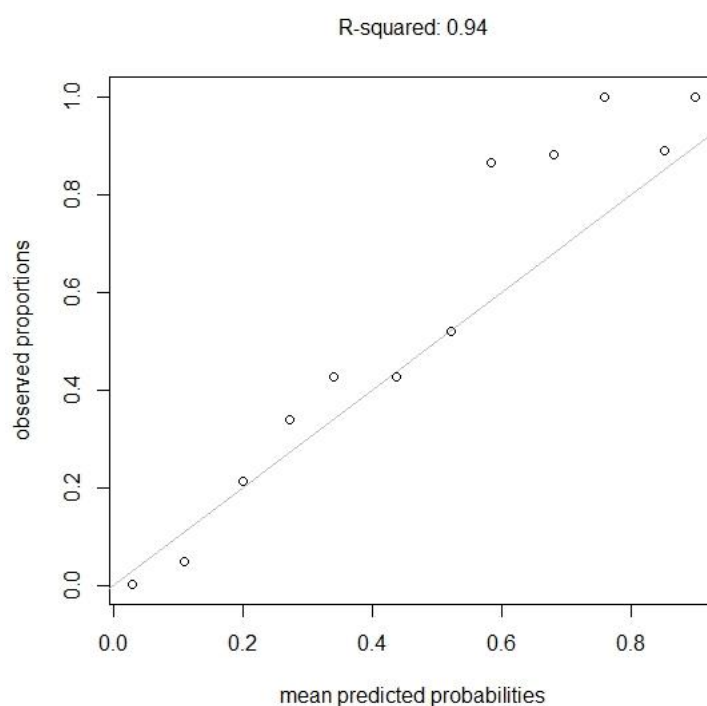


Figure 6.7 Mean predicted probabilities and observed proportions of rhotic tokens.

### 6.2.2 Discussion

A comparison with patterns reported for postvocalic /r/ in Indian English and other varieties of English reveals both similarities and differences. In the present study, following phonological environment resulted being the most significant factor in the model. As noted in section 4.1.3.1.1, work on Indian English postvocalic /r/ has tended to look at social rather than linguistic constraints, but Chand (2010), who did examine the effect of phonetic environment (coded as a combination of preceding vowel and following segment), found this variable to be the most significant predictor of /r/-deletion after gender for Delhi Indian English speakers. Differences in categorisation make a comparison of the ranking of factor levels across the two studies difficult, but note that Chand found preconsonantal coda



contexts, either with a full vowel (*fourth*) or a schwa nucleus (*bird*), to favour null realisations of coda /r/ the most. Furthermore, the tendency of first-generation East African Indian speakers to articulate coda /r/ more frequently in prepausal than preconsonantal position confirms a pattern widely reported in investigations of postvocalic /r/ (Labov 1972b, 2006; Myhill 1988; Nagy & Irwin 2010; Barras 2010; Piercy & Britain 2011). While it may not be appropriate to speak of a universal effect here (see e.g. Becker 2009 for a possible counterexample), it is evident that, for this predictor, the first generation follows a trend that is very common in native English dialects and which is also attested in other second-language and contact-induced varieties, e.g. Jamaican English (Wells 1982).

As regards gender, it may be recalled from section 4.1.3.1.2 that this variable has been shown to significantly constrain the use of postvocalic /r/ in Indian English. Sahgal & Agnihotri (1988) found that, of the four (Delhi) Indian English features they analysed, the use of coda /r/ distinguished their female and male participants most clearly: women deleted postvocalic /r/ considerably more often than men, and young females used more /r/-less variants than all other groups. The overall gender difference the authors report for casual speech (16.07%) is over four times as large as the one between female and male speakers in the present study (3.8%). Chand (2010) likewise demonstrated that, among her Delhi informants, women were less rhotic than men, with gender ranking first among the eight social and linguistic constraints that were retained as significant in the regression analysis.<sup>13</sup> In both cases, female speakers were thus found to use prestige variants (in this case: zero realisations) more frequently (Sahgal & Agnihotri 1988: 60; Chand 2010: 21-22) and possibly to be leading a change towards non-rhoticity (Sahgal & Agnihotri 1988: 62). These results are in line with a number of reports on gender-related variation in the use of postvocalic /r/ in other varieties of English (Romaine 1978; Gordon et al. 2004; Feagin 1990; Nagy & Irwin 2010; Lawson et al. 2011), but note that some studies found few differences between female and male speakers in this regard (Labov 1972b, 2006; Becker 2009; Piercy & Britain 2011).

As shown earlier, among the first-generation participants of the present study female speakers were slightly more rhotic than males but the effect of gender was clearly statistically non-significant ( $p = 0.964$ ). Although these results apparently stand in contrast with previous findings on Indian English, it is likely that the lack of a clear gender

---

<sup>13</sup> No percentage scores for gender are given in Chand (2010).

difference stems from the limitations of the data, rather than reflecting a real divergence from attested Indian English patterns. More specifically, two factors that need to be considered in this respect are the size of the sample and the distribution of speakers in terms of age. With regard to the former, it is of course well-known that statistical significance depends, among other things, on the total number of tokens that make up a dataset (to the extent that, from a rather pessimistic point of view, a *p*-value merely reflects the sample size; Baayen 2008: 115). In part, the regression analysis may therefore have failed to return gender as significant because it was based on a corpus of 550 tokens only (as opposed to, say, Chand's considerably bigger dataset of 3,813 tokens<sup>14</sup>).

What appears to be even more relevant, though, is that the age distribution of speakers within each gender group is rather different: whereas four women out of six are older than 60, only one man out of five is. Since within the first generation the use of rhotic variants correlates strongly with age, the predominance of older female speakers is likely to have contributed to a higher overall rhoticity level for women and to the lack of a clear gender difference. In the regression analysis presented above, age was modelled as a continuous predictor because splitting up continuous numeric variables into discrete groups or bins (e.g. young vs. old), which is mandatory in GoldVarb, causes a loss of information and is therefore at best dubious statistical practice (Johnson 2009: 362). It is noteworthy, however, that if one compares the two female speakers who are aged 60 or younger with their male counterparts, the constraint ranking for gender is reversed: as shown in table 6.7, women's average rhoticity level (4.0%) is now slightly lower than men's (8.5%). Likewise, female participants aged above 60 pronounce coda /r/ less often than the sole male speaker in the same age category (29.5% and 52.0%, respectively).

Table 6.7 First-generation speakers' production of rhotic tokens by age and gender (R = rhotic realisation, N= total number of tokens per cell).

age	women		men		total	
	R %	N	R %	N	R %	N
> 60	29.5	200	52	50	34	250
≤ 60	4	100	8.5	200	7	300

<sup>14</sup> No overall token number is reported in Sahgal & Agnihotri (1988).

With such a small number of speakers, and particularly with only one male informant aged above 60, it is of course not possible to determine whether this constraint ranking reflects a true gender effect or is simply due to individual variation. This pattern is nevertheless suggestive because it is in line with previous research on Indian English postvocalic /r/. It could thus be that first-generation East African Indians do follow the Indian English trend of women being less rhotic than men or perhaps also that, within this group, women accommodated to non-rhotic East African English or East Midlands English to a greater extent than men did, but that this tendency is obscured by the limited amount of data and skewness in age distribution. While a larger number of subjects would be required to assess whether this was indeed the case, a further noteworthy aspect of this categorisation is that in the present sample, the age of 60 is an important dividing line in terms of informants' occupation. The implications of this are discussed presently, in connection with age.

In the regression analysis presented in the previous section, age resulted being a very significant predictor which has a comparably strong influence on patterns of occurrence of postvocalic /r/ within the first generation, with younger speakers being less rhotic than older speakers. This parallels the age pattern reported by Sahgal & Agnihotri (1988), whereas a somewhat more complex situation was revealed by Chand (2010), whose informants displayed a decrease in rhoticity from the oldest to the middle-aged generation, followed by an increase in /r/-full variants in the youngest generation (see section 4.1.3.1.2). In both studies, the differences in rhoticity levels across age groups were used as apparent-time evidence for changes in progress, a practice which has been widely adopted in investigations of coda /r/ since Labov's New York City study (cf. Labov 1972b, 2006; Feagin 1990; Gordon et al. 2004; Barras 2010; Nagy & Irwin 2010; Piercy & Britain 2011).

Due to the small number of speakers and their limited age range (42-80), an interpretation of the correlation between age and rhoticity levels in terms of a change in apparent time would not be very fruitful here. Since, as Hill & Lewicki (2006: 346) observe, '[t]he major conceptual limitation of all regression techniques is that you can only ascertain relationships, but never be sure about the underlying causal mechanism', it seems essential to address the issue of causality though, seeking to identify the factors that may explain these age differences. Returning to the age of 60 as a dividing line, table 6.7 shows that first-generation speakers who are older than 60 articulate coda /r/ much more frequently than those who are aged 60 or younger (34% and 7%, respectively, if the figures

for female and male informants are combined). In the present sample, this age division coincides with the distinction between participants who were part of the working population and those who were retired. This is in turn likely to reflect differences in individual informants' daily use of English and in the amount of contact they had with the local English dialect. Most first-generation speakers in fact reported that the use of different languages was not uniform across domains: while Indic languages were generally prevalent in the home and with friends (though mixing with English was also mentioned during the interviews, particularly in connection with children), English tended to be the main work language. The predominance of English in the employment domain is therefore likely to have led to a more frequent use of the language among working participants, as well as greater contact with East Midlands English for this group, which may have caused greater accommodation to the local non-rhotic dialect.

Overall, this discussion has thus shown that at least part of the variation in the use of postvocalic /r/ exhibited by first-generation East African Indians can be related to predictors whose constraining effect is widely attested in previous research on coda /r/ in Indian English and/or other English dialects: following phonological environment, age, and possibly (though this needs empirical confirmation) gender. The possibility that the correlation between rhoticity levels and age may reflect differences in participants' daily use of English and amount of contact with the local non-rhotic English variety is particularly intriguing because it is in line with the general argument that first-generation participants have maintained Indian English patterns of use of postvocalic /r/. Feature maintenance can indeed be expected to be strongest among those speakers who have least contact with the local English variety, namely, older, retired informants.

In concluding this discussion, two methodological difficulties deserve consideration here. The East African Indian community in Leicester is characterised by a very complex sociolinguistic history and considerable internal heterogeneity (cf. chapter 3). In migrant communities of this kind, within-group variation is likely to be constrained by a host of interacting factors. This becomes particularly evident when considering the rhoticity levels and life histories of individual speakers (cf. table 6.4 and figure 6.4). For instance, it could very well be that speaker I and speaker N's comparably high percentages scores of rhotic tokens are also related to their Punjabi first-language background (see sections 4.1.3.1.2 and 6.1.2.1). The practice (common among East African Indians) of spending a few years

in India for further education and/or work might have led to greater influence from variably rhotic Indian English for speaker E and speaker X. It is also possible that the older age of arrival and shorter length of UK residence of speaker N contributed to lesser contact with and accommodation to non-rhotic East Midlands English. Conversely, the high education level of speaker S, the only participant who studied up to MA level, may be linked to this speaker's non-rhoticity. It also seems plausible that within the broad categories of working vs. retired informants, inter-speaker differences in the production of coda /r/ were partly affected by the fact that participants pursued (or used to pursue) different types of occupations (e.g. businessman, social worker, factory worker, housewife), which in turn involved, once again, greater or lesser contact with the local variety of English.

These examples point to the comparability issues that arise when investigating the linguistic behaviour of such a heterogeneous community. While many of these sources of influence could be fruitfully explored in a larger speaker sample, a further methodological difficulty stems from the peculiarity of East African Indians' sociolinguistic history itself. Assessing the effect of predictors such as education level and type of occupation (which have been commonly used as indices of social class in variationist sociolinguistic research since Labov 1972b, 2006) on linguistic variation is not straightforward when speakers' lives were disrupted by a dramatic event like the 1972 expulsion of Ugandan Asians and exhibit an unusually high degree of both down- and upward social mobility. It was not uncommon, for example, for participants to have grown up in an affluent family in East Africa but to have been unable to carry their education beyond secondary level due to enforced migration, or to have moved from a professional occupation such as teaching in East Africa to cleaning or factory work in the UK, to then regain a considerably high socioeconomic status in the course of time (see chapter 3 and section 5.1). While some of the constraints affecting the occurrence of postvocalic /r/ among first-generation East African Indians were examined in the second part of this chapter, inter-speaker variability in the use of this variable thus remains a promising avenue for future research.

### 6.3 Summary

In the first part of chapter 6, I demonstrated that the use of postvocalic /r/ sharply distinguishes first- and second-generation East African Indians. More specifically, first-

generation speakers are variably rhotic, with a certain tendency towards non-rhoticity, and display an overwhelming preference for tapped and trilled realisations of rhotic tokens. Second-generation speakers, on the other hand, are (almost) categorically non-rhotic and clearly tend to realise coda /r/ (when pronounced, especially in word-final prevocalic position) as an approximant. I argued that these differences are most plausibly accounted for in terms of maintenance of Indian English patterns vs. accommodation to East Midlands English (although, for the first generation, partial accommodation to East African English or East Midlands English cannot be excluded on linguistic grounds alone).

In the second part of the chapter, a more fine-grained analysis examined the effect of following phonological environment, gender and age on the variable occurrence of rhoticity within the first generation. The results reveal both parallels to and (possibly apparent) divergence from constraint patterns attested for coda /r/ in Indian English and elsewhere. The strong positive correlation found between rhoticity and age is particularly significant as it is likely to reflect varying degrees of contact with and accommodation to the local variety of English. I also pointed to a number of other factors which may influence the use of postvocalic /r/ by the first generation, many of which are similarly linked to greater or lesser contact with Indian English or East Midlands English.

## **7. Results: FOOT, STRUT and NURSE**

### **7.0 Introduction**

Chapter 7 deals with variation in the production of FOOT, STRUT and NURSE among East African Indians in Leicester. I present and discuss the results of an acoustic analysis which compares the phonetic quality (sections 7.1.1 and 7.2.1) and duration (sections 7.1.2 and 7.2.2) of the three vowels across first- and second-generation speakers. The goal is once again twofold: I seek to establish, on the one hand, whether for the first generation the phonemic status and quality of FOOT, STRUT and NURSE exhibit parallels to the production of these vowels in Indian English, East African English or East Midlands English; and on the other hand, to determine how patterns evolve from the first generation to the second. To this end, I investigate two related questions: whether each generation has a qualitative and/or quantitative distinction between FOOT, STRUT and NURSE, and how the phonetic quality and duration of each vowel change from one group to the other. In addition to cross-generational differences, I also examine gender-related variation within each group. For vowel quality, the analysis includes a comparison between the raw and normalised formant data and an evaluation of the three normalisation techniques presented in section 5.3.3. The patterns of variation in vowel quality and length which emerge from the graphical inspection of the data are tested in three series of mixed-effects regression analyses: one for F1 (representing vowel height), one for F2 (representing vowel advancement) and one for vowel duration.

### **7.1 Results**

#### **7.1.1 Vowel quality**

##### **7.1.1.1 Non-normalised data**

The dataset used for the analysis consists of 2,440 tokens of FOOT, STRUT and NURSE. As table 7.1 shows, tokens were distributed relatively evenly by gender (1,157 and 1,283 for female and male speakers, respectively) but were less balanced across generations, with the second-generation category including a higher number of tokens (1,423) than the first-

generation category (1,017).<sup>1</sup> This was primarily due to the larger number of participants in the former group (cf. section 5.1). Furthermore, while FOOT, STRUT and NURSE occurred with very different frequencies in the sections of spontaneous conversation which were analysed, the frequency of each vowel was relatively constant across genders and generations. Thus, STRUT was by far the most common of the three, making up roughly 50% of the total number of vowel tokens for each speaker group, followed by NURSE (around 35%) and, lastly, by FOOT, which was quite rare (around 15%).

Table 7.1 Number of FOOT, NURSE and STRUT tokens by gender and generation.

gender	generation	vowel			total
		FOOT	NURSE	STRUT	
female	first	77	150	248	475
	second	84	274	324	682
	total	161	424	572	1157
male	first	77	172	293	542
	second	111	248	382	741
	total	188	420	675	1283
total		349	844	1247	2440

The boxplots in figures 7.1-7.4 show the distribution of the raw F1 and F2 values of the three vowels for each speaker group (hereafter: gen1f = first-generation females; gen2f = second-generation females; gen1m = first-generation males; gen2m = second-generation males). In these figures, the plus signs represent the means, the bold-typed lines the medians, the boxes the values ranging from the 25% to the 75% quartiles (or interquartile range), the whiskers the values which are at most 1.5 interquartiles ranges away from the box, and the circles any outlier values falling outside this range (Gries 2009: 118-119). The four graphs indicate that, in general, the distribution of formant values within the subsamples roughly follows a normal distribution: in most cases, the means and medians are located very closely to each other in the centre of the boxes, and the whiskers on each side of the boxes tend to be of more or less equal length. This also holds for the normalised data on which the linear mixed-effects regression analysis was carried out (see the boxplots in appendix II) and is one of the main prerequisites of this type of statistical technique (Gries 2008: 231)

<sup>1</sup> The number of tokens and mean formant frequencies of the vowels used for the normalisation procedures (FLEECE, TRAP, START) are reported in appendix I and appendix III, respectively.



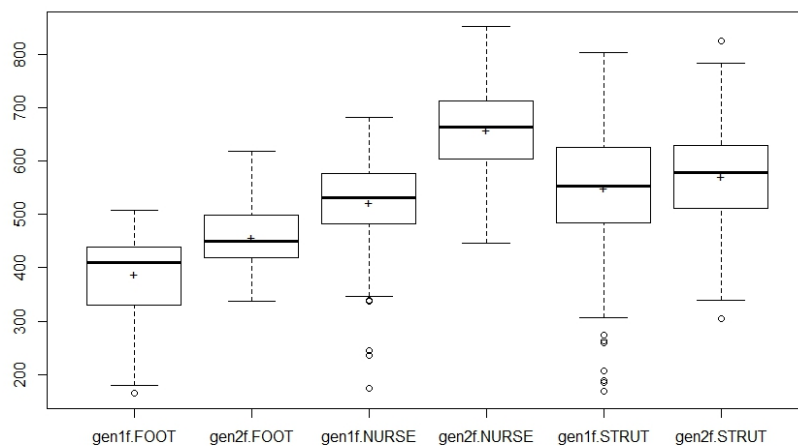


Figure 7.1 Boxplot of the F1 values of FOOT, STRUT and NURSE for first- and second-generation female speakers (in Hertz).

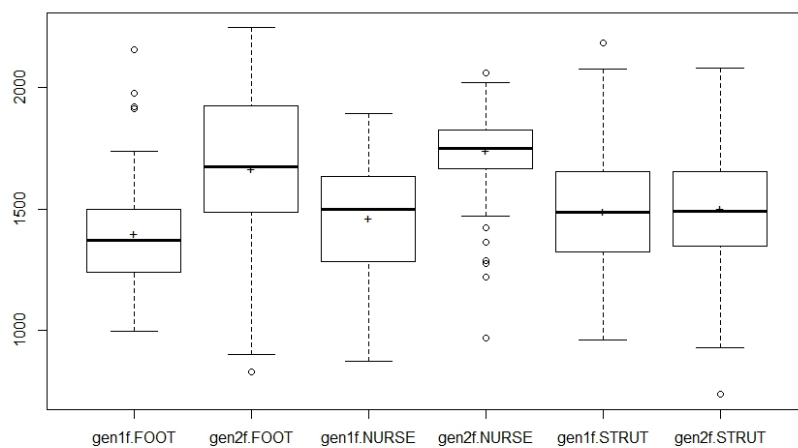


Figure 7.2 Boxplot of the F2 values of FOOT, STRUT and NURSE for first- and second-generation female speakers (in Hertz).

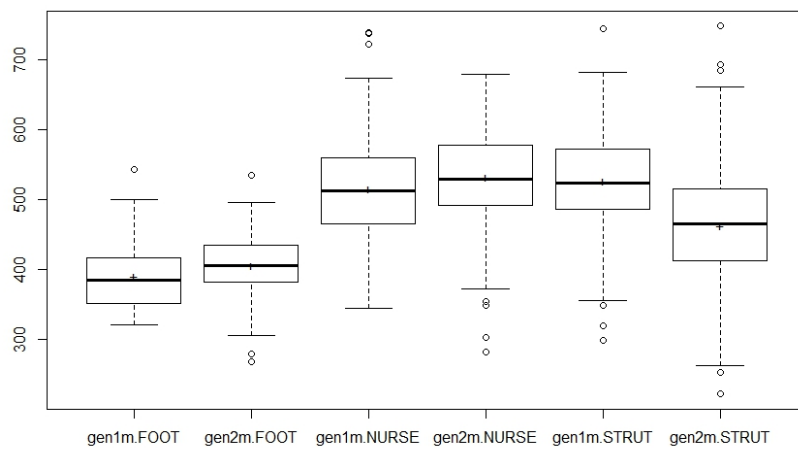


Figure 7.3 Boxplot of the F1 values of FOOT, STRUT and NURSE for first- and second-generation male speakers (in Hertz).

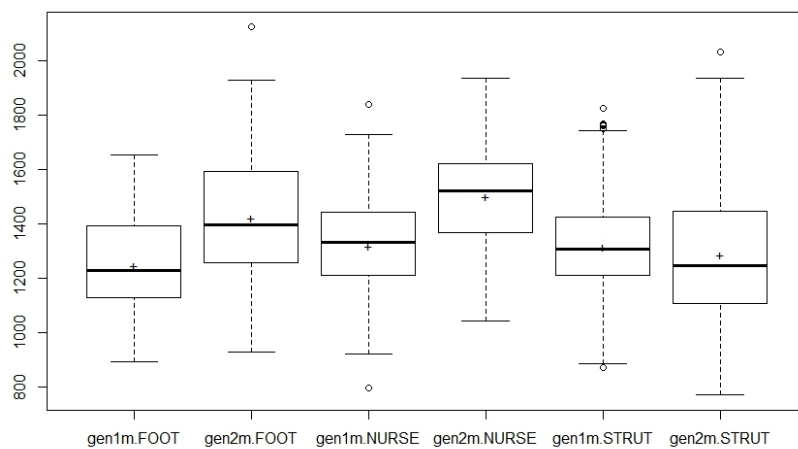


Figure 7.4 Boxplot of the F2 values of FOOT, STRUT and NURSE for first- and second-generation male speakers (in Hertz).

Moreover, the boxplots provide valuable information on the amount of variability found both within and across subsamples. In most cases, the interquartile range, which encompasses the central 50% of formant values, is rather large, pointing to considerable heterogeneity (cf. Gries 2009: 114): for female speakers, the mean difference between the

25% and 75% quartiles is around 110 Hertz for F1 and 300 Hertz for F2 (figure 7.1 and 7.2); and for male speakers, it is roughly 80 Hertz for F1 and 270 Hertz for F2 (figure 7.3 and 7.4). Moreover, the whiskers and outlier dots representing the remaining 50% of formant values show that in many cases, the entire data spread spans several hundred Hertz for F1 and even larger value ranges for F2. This variability within subsamples is not very surprising, considering the many sources it stems from: physiological/anatomical differences between speakers (cf. section 5.3.3), varying recording conditions across interviews, the numerous factors affecting vowel formant values in spontaneous conversation (preceding and following segment, number of syllables in a word, position of the word within a phrase or sentence, speech rate, emphasis and so on), differences in interview setting (one-on-one vs. group interviews), as well as social differences across individual participants within each group.

In spite of all this variation, however, the differences in median/mean values and the comparably small amount of overlap exhibited by the boxes representing the interquartile ranges suggest that there are considerable differences in the phonetic quality of FOOT, STRUT and NURSE across the two generations. These differences also clearly emerge from an F1-F2 plot of the mean values of the three vowels for the four groups (and their position vis-à-vis FLEECE, START and TRAP). In figure 7.5, the physiological/anatomical gender differences characteristic of raw formant data are apparent: since formant frequencies are generally lower for men than for women, the vowel spaces of the two male groups are located in the top right corner of the plot and are smaller than those of the female groups. Nevertheless, the overall patterns of cross-generational variation are very similar across genders. For the first generation, FOOT is considerably higher than STRUT and NURSE, which are located next to each other. In contrast, for the second generation the three vowels display a triangular configuration: FOOT and NURSE are located highest and lowest, respectively, whereas STRUT is intermediate in terms of height and somewhat more back. The plot thus indicates that the phonetic quality of FOOT is different from that of STRUT and NURSE for both generations, while STRUT and NURSE are separate phonemes for the second generation but qualitatively much less clearly distinct for the first generation (cf. also the similarity in the distribution of formant frequencies for gen1 STRUT and NURSE in the boxplots in figures 7.1-7.4).

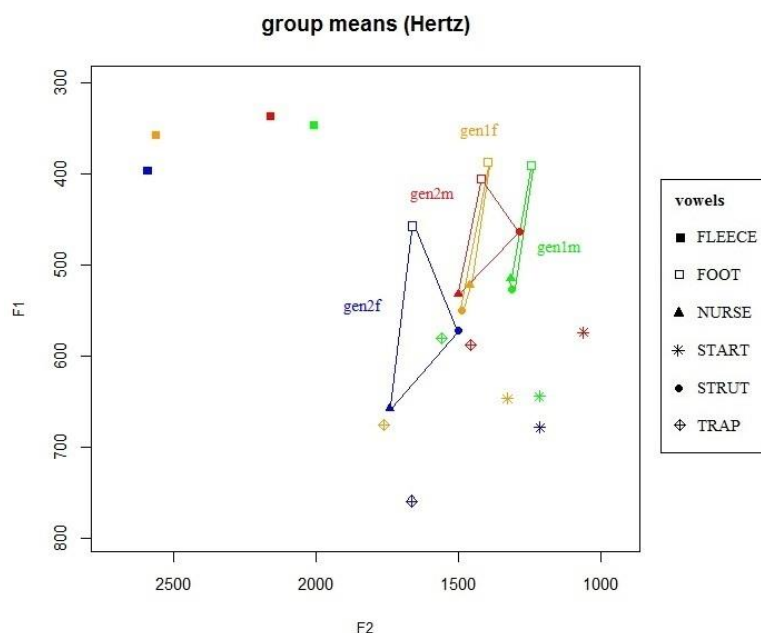


Figure 7.5 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (in Hertz). Lines have been drawn between the three vowels to facilitate comparison between plots. FLEECE, TRAP and START are shown as reference points.

An examination of the changes in the phonetic quality of each vowel from one generation to the next reveals that gen2 FOOT and gen2 NURSE are considerably more front than their gen1 counterparts for both female and male speakers (hence the higher F2 values of these vowels for the second generation in the boxplots in figures 7.2 and 7.4). As regards vowel height, on the other hand, the two generations display one noticeable difference which is not uniform across genders. More specifically, the vowels of gen1 female speakers are located higher in the vowel space with respect to their gen2 counterparts than the vowels of gen1 male speakers with respect to their gen2 counterparts. As a consequence, FOOT and NURSE are lowered much more from the first generation to the second generation for female speakers than they are for male speakers (cf. also the higher F1 values of FOOT and NURSE for gen2f in the boxplot in figure 7.1); moreover, STRUT is distinctly raised from gen1 to gen2 for male participants but remains approximately in the same position for female participants (see also the lower F1 values of STRUT for gen2m in the boxplot figure 7.3). I return to a fuller discussion of this gender difference below.

### 7.1.1.2 Evaluation of the three normalisation techniques

With raw formant data, variation related to physiological/anatomical differences between speakers cannot be reliably distinguished from variation constrained by social factors. The measurements in Hertz were therefore normalised with the three techniques discussed in chapter 5: the Bark difference method, Lobanov's  $z$ -score transformation and Watt & Fabricius' modified  $S$ -centroid procedure. Figures 7.6, 7.7 and 7.8 show the results of the normalisation via these three algorithms, which is evaluated in the following.

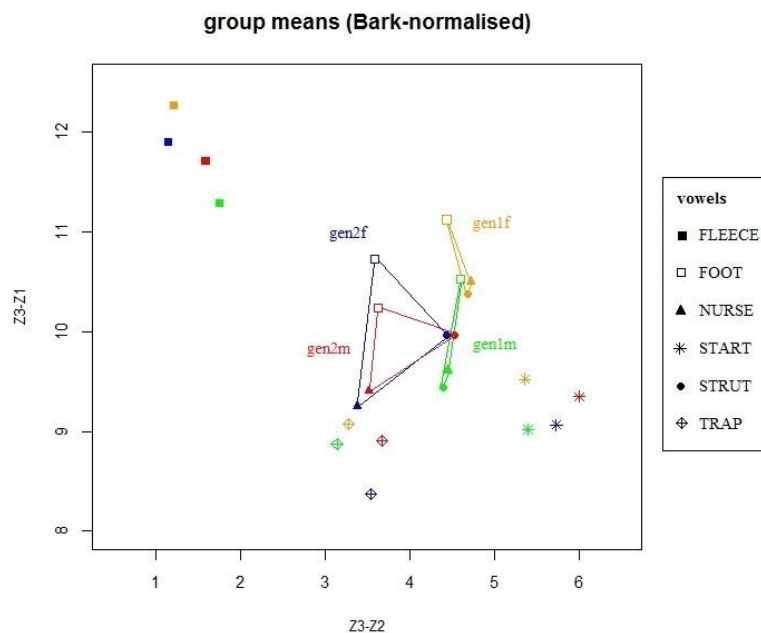


Figure 7.6 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (Bark-normalised). Lines have been drawn between the three vowels to facilitate comparison between plots. FLEECE, TRAP and START are shown as reference points.

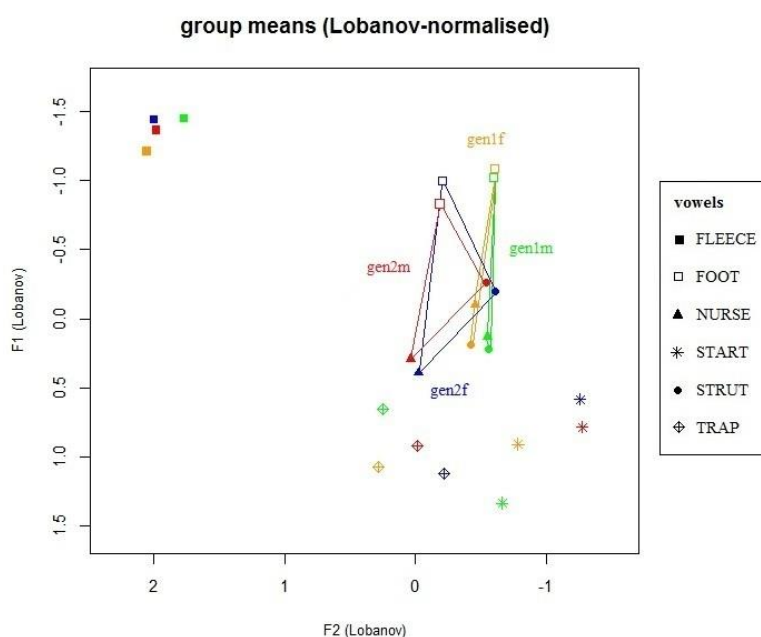


Figure 7.7 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (Lobanov-normalised). Lines have been drawn between the three vowels to facilitate comparison between plots. FLEECE, TRAP and START are shown as reference points.

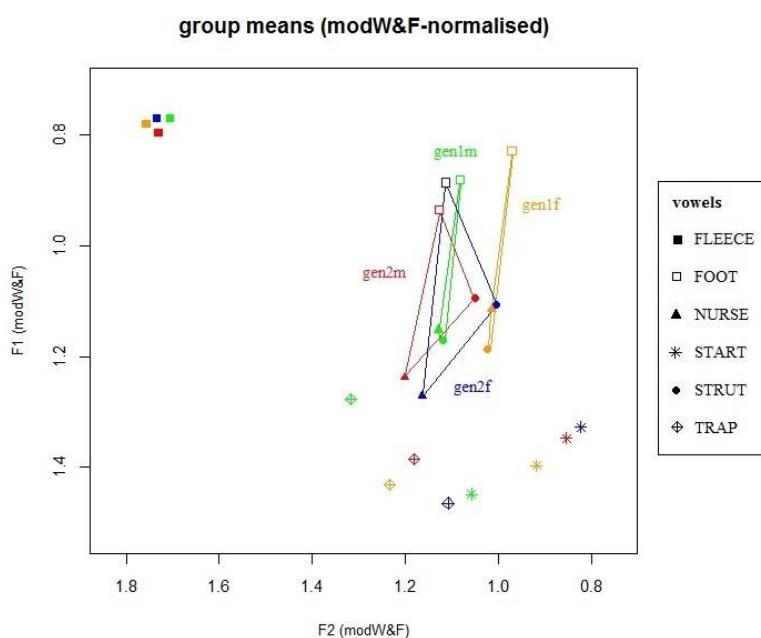


Figure 7.8 Mean F1 and F2 values of FOOT, STRUT and NURSE for first- and second-generation female and male speakers (modWatt&Fabricius-normalised). Lines have been drawn between the three vowels to facilitate comparison between plots. FLEECE, TRAP and START are shown as reference points.

In terms of the first of the two evaluation criteria listed in section 5.3.3, the factoring out of physiological/anatomical differences between speakers, it is immediately apparent that all three procedures succeeded in eliminating this type of variation to a large extent. In the normalised plots, the vowel spaces of the male groups are not located in the top right corner as in the non-normalised data (figure 7.5) anymore; instead, they have been shifted towards the centre of the plot and overlap with the vowel spaces of the female groups. The normalisation routines have also brought the vowel space areas of the male and female groups into much greater agreement in terms of size. Moreover, it is worth pointing out that in the normalised plots, the configuration of FOOT, STRUT and NURSE exhibited by each group has been preserved at least to the extent that one of the most striking differences between the generations, that is, the absence vs. presence of a clear qualitative distinction between STRUT and NURSE displayed by the first and second generation, respectively, is visible in the normalised data as well. In this sense, the normalisation represents, in all cases, an improvement with respect to the Hertz data.

The second evaluation criterion mentioned in section 5.3.3 involves the introduction of artefacts by the normalisation. Although the general pattern of cross-generational variation is still apparent in the normalised data, a comparison of the plots shows that each normalisation routine produced somewhat different results. Beginning with the Bark difference method (figure 7.6), one needs to bear in mind that it is rather difficult to compare the plot normalised via this procedure to the Lobanov- and Watt & Fabricius-normalised plots (figures 7.7 and 7.8). The reason is that, as Thomas (2011: 165) notes, this type of technique tends to change the shape of the vowel polygon: 'for example, high front unrounded vowels appear to be stretched higher than other high vowels because  $F_3$  is higher for them than for any other vowels.' In figure 7.6, this effect is visible in the position of FLEECE with respect to FOOT. However, the plot also shows changes in the relative positions of gen2 FOOT, STRUT and NURSE and their gen1 counterparts which are not easily accounted for in terms of such general differences. More specifically, the vowels of first-generation female speakers are noticeably higher than those of the other speaker groups, so that gen1f STRUT and NURSE are located next to gen1m FOOT. Moreover, the internal vowel configuration of this group has changed, with FOOT now being more front than STRUT and NURSE (rather than more back as in the Hertz data). Because these changes in alignment are relatively implausible, it seems likely that they are artefacts introduced by

the Bark normalisation (possibly due to inaccurate F3 measurements or the influence of adjacent consonants on F3 values; cf. Thomas 2011: 165). This technique thus appears to have led to considerable skewing of the raw formant data.

In contrast, both the Lobanov and modified Watt & Fabricius techniques reproduce the overall differences between the generations rather well. One notable discrepancy between the results obtained with the two vowel-extrinsic, formant-intrinsic procedures emerges from a comparison of figures 7.7 and 7.8 though: while Lobanov is quite successful in preserving the relationships between the vowels of first- and second-generation male speakers visible in the raw formant data, in the Watt & Fabricius-normalised plot, gen1m FOOT, STRUT and NURSE have been shifted leftwards with respect to the gen2m vowels, so that they appear to be more front (or, conversely, that the gen2m vowels seem to be more back) than in the non-normalised plot. It is possible that this effect is related to differences in the configurational relationship of TRAP and START across groups. Thomas (2011: 169) points out that if the lower parts of the vowel spaces of different groups are weighted in different ways (for example, by having either one or two parallel vowels at the bottom), they can show some skewing after normalisation through the *S*-centroid procedure. In the present case, gen1 male (but not female) speakers frequently produced raised realisations of TRAP, approaching the quality of RP DRESS. As a consequence, START is clearly the only vowel occupying the bottom corner of the vowel space for this group, with the vowel polygon being weighted towards the back, whereas for the other groups, TRAP is the lowest vowel and the vowel space is weighted towards the front (see figure 7.5). According to Thomas & Kendall (2011), ø[the] distortion at the bottom of the vowel envelope is lessened by the Watt & Fabricius modified method.ö It could be, however, that in this case the differences in the relative positions of TRAP and START across groups are so large that they cause skewing even when using the modified version of the *S*-centroid procedure.

The performance of the Lobanov and modified Watt & Fabricius procedures is similar with regard to the female groupsødata. An issue that certainly needs to be addressed is that for female speakers, both techniques introduce a change in the positions of gen1f FOOT, STRUT and NURSE with respect to their gen2f counterparts, with the result that the three gen1f vowels seem to be somewhat lower (or, conversely, that the gen2f vowels appear to be higher) than in the Hertz data. On the one hand, it is possible that this is an artefact of the normalisation, possibly related to differences between the female groupsø



vowel space shapes (since vowel-extrinsic, formant-intrinsic procedures have been claimed to sometimes produce skewed values when speakers with different vowel systems are compared; cf. section 5.3.3). On the other hand, it could also be that this effect results from the normalisation routines successfully eliminating physiological/anatomical differences between individual female speakers and, in other words, that it actually represents an effective rather than ineffective performance of the algorithms. This possibility is supported by the fact that in the non-normalised plot in figure 7.5, all six gen1f vowels (and not just FOOT, STRUT and NURSE) have lower F1 frequencies than the corresponding gen2f vowels, so that the whole vowel polygon of first-generation females is somewhat higher than that of second-generation females. Such a systematic pattern could be an indication of anatomical/physiological rather than social differences between individual speakers.

The issue has to be left unsettled here, and the differences between the raw and normalised formant values discussed above clearly support Clopperø (2009: 1441) call for more work on the normalisation of data from speakers with different vowel space shapes: øThus, additional research is still needed to determine which of the proposed computational methods, if any, are well suited to comparing vowel systems of different shapes, and to develop new methods to allow comparison of normalized vowel spaces across a wider range of languages and dialects.ö Based on the evidence presented here, however, it may be concluded that the Bark difference method was less successful in normalising the data than the other two procedures, which confirms previous findings that vowel-extrinsic, formant-intrinsic normalisation techniques are better suited to sociophonetic purposes than vowel-intrinsic, formant-extrinsic procedures (cf. section 5.3.3). The evidence also suggests that, of the two vowel-extrinsic routines which were evaluated, Lobanovø z-score transformation performed somewhat better than the modified Watt & Fabricius procedure in that it preserved the relative positions of gen1 FOOT, STRUT and NURSE and their gen2 counterparts more successfully. For this reason, Lobanov-normalised formant values were used for the rest of the analysis.

### **7.1.1.3 Linear mixed-effects regression analyses for F1 and F2**

As outlined in section 5.4.2, the differences between the four speaker groups were tested in two linear mixed-effects regression analyses which estimated the effect of vowel, generation, gender and of the four interactions between these predictors on Lobanov-

normalised F1 and F2, respectively. Speaker and lexical item were added to the models as random effects in order to control for imbalances in the dataset as well as inter-speaker and inter-word variability. In the following, I first present the results for F1 (i.e. differences involving vowel height) and then those for F2 (i.e. variation along the front-back dimension), after which I consider the implications of these findings for the phonemic status of FOOT, STRUT and NURSE across the four speaker groups.

Table 7.2 below contains the output of the regression analysis carried out by the `lmer` function for Lobanov-normalised F1. As in the mixed-effects logistic regression analysis of rhoticity, the effects of the fixed factors are presented with treatment contrasts (cf. section 6.2.1). Here, the intercept shows the combined estimate for the factor levels STRUT (for vowel), first (for generation) and female (for gender), to which the non-default levels of factors (FOOT and NURSE for vowel, second for generation and male for gender) and their interactions are compared. Note that, whereas the `glmer` function uses log-odds, `lmer` returns coefficient estimates in the units of the dependent variable (Johnson 2009: 380), which in this case are the *z*-scores computed by the Lobanov normalisation. Furthermore, the results presented in table 7.2 and in the other tables in this chapter have a few more columns than table 6.6, which contain additional measures of model fit, an estimate of the residual error (`residual`) and the values listed under `MCMCmean`, `HPD95lower`, `HPD95upper` and `pMCMC`. These columns show the output of the `pvals.fnc` (p-values) function that was used to obtain p-values for the factor levels. The `pvals.fnc` function performs Markov chain Monte Carlo (MCMC) sampling, and its output consists of the MCMC means, as well as the estimated 95% highest posterior density (HPD) confidence intervals and the corresponding p-values (cf. section 5.4.2).

Table 7.2 Results of the linear mixed-effects regression analysis estimating the influence of vowel, generation and gender on Lobanov-normalised F1.

Linear mixed model fit by REML							
Model fit statistics							
	AIC	BIC	logLik	deviance	REMLdev	df	
	4276.969	4363.966	-2123.485	4203.796	4246.969	15	
Total N	2440						
Random effects							
	Variance	Std. Dev.	N				
lexical item	0.058	0.240	408				
speaker	0.015	0.122	23				
residual	0.298	0.546	n.a.				
Fixed effects							
	Estimate	Std. Error	t value	MCMCmean	HPD95lower	HPD95upper	pMCMC
Intercept	0.217	0.076	2.864	0.202	0.052	0.355	0.0112
vowel: FOOT	-1.306	0.096	-13.571	-1.294	-1.472	-1.125	0.0001
vowel: NURSE	-0.263	0.071	-3.721	-0.260	-0.391	-0.129	0.0001
generation: second	-0.425	0.092	-4.620	-0.418	-0.599	-0.231	0.0002
gender: male	0.025	0.097	0.258	0.036	-0.160	0.237	0.7142
vowel: FOOT x generation: second	0.473	0.104	4.569	0.472	0.272	0.675	0.0002
vowel: NURSE x generation: second	0.888	0.077	11.560	0.885	0.737	1.042	0.0001
vowel: FOOT x gender: male	0.053	0.106	0.503	0.048	-0.166	0.257	0.6374
vowel: NURSE x gender: male	0.171	0.082	2.077	0.162	-0.008	0.315	0.0476
generation: second x gender: male	-0.069	0.125	-0.547	-0.082	-0.341	0.167	0.5246
vowel: FOOT x generation: second x gender: male	0.182	0.141	1.286	0.190	-0.103	0.456	0.1806
vowel: NURSE x generation: second x gender: male	-0.203	0.107	-1.898	-0.197	-0.408	0.011	0.0634
Overall significance of three-way interaction*							
	Chisq	Chi Df	p				
vowel x generation x gender	7.467	2	0.024				

\*assessed via a likelihood ratio chi-squared test

Beginning with the random effects, two likelihood ratio chi-squared tests show that the model with lexical item and speaker fits the data significantly better than the same model without lexical item ( $\text{Chisq} = 155.204$ ,  $\text{df} = 1$ ,  $p < 0.001$ ) or without speaker ( $\text{Chisq} = 48.716$ ,  $\text{df} = 1$ ,  $p < 0.001$ ) and, in other words, that the inclusion of both grouping factors in the model is justified. The parameters for lexical item and speaker listed in table 7.2 indicate that, beyond the amount of variance explained by the fixed effects, individual words and participants still exhibit differences on the order of 0.24 and 0.122  $z$ -score standard deviations, respectively. Considering that under a normal distribution 95% of the values are within  $\pm 2$  standard deviations away from the mean (here:  $\pm 0.48$  for lexical item and  $\pm 0.244$  for speaker; see Johnson 2010a), these values point to marked inter-word and inter-speaker variability, especially when compared to the fixed-effects coefficients. The third term listed under the random effects, the residual error parameter, represents an estimate of the amount of variance that is not accounted for by the model (Baayen 2008: 246). The high standard deviation value (0.546) given for this parameter suggests that a considerable proportion of variation remains unexplained.

As regards the three fixed effects, a likelihood ratio chi-squared test reveals that the three-way interaction between vowel, generation and gender is significant ( $p = 0.024$ ). This indicates that the effect of one or more of the two-way interactions between two predictors is not uniform across the levels of the third predictor and, in other words, that the effects of the three factors on F1 are not independent of each other. To illustrate this with an example: first-generation speakers exhibit a two-way interaction between vowel and gender in that for the male group, NURSE and STRUT are located next to each other in the vowel space, whereas for the female group, the former is somewhat higher than the latter (cf. figure 7.7). The effect of the factor vowel on F1 is therefore not the same across the levels of the factor gender. A three-way interaction between vowel, gender and generation could result from the fact that the gender difference in the production of NURSE and STRUT displayed by the first generation is not replicated by the second generation: for this group, NURSE is considerably lower than STRUT for both female and male speakers. The interaction between vowel and gender is therefore not uniform across the levels of the factor generation.

When interactions between predictors are statistically significant, the interpretation of the coefficient values of the lower-order terms in the model (that is, of the two-way interactions and main effects in the case of a three-way interaction, or of the main effects in the case of a two-way interaction) is no longer straightforward (cf. section 5.4.2). For this

reason, I split up the sample of Lobanov-normalised F1 frequencies along the levels of the predictor gender and ran two follow-up regression analyses on the female and male subsets of data, with vowel and generation as fixed effects and speaker and lexical item as random effects. In both analyses, the two-way interaction between vowel and generation resulted being highly significant (female speakers:  $\text{Chisq} = 124.997$ ,  $\text{df} = 2$ , Bonferroni-adjusted  $p < 0.001$ ; male speakers:  $\text{Chisq} = 99.007$ ,  $\text{df} = 2$ , Bonferroni-adjusted  $p < 0.001$ ). This indicates that the two generations exhibit different configurations of FOOT, STRUT and NURSE in terms of vowel height, and/or that the vowels underwent different cross-generational changes in F1 frequencies.

To determine the origins of the two-way interactions, I divided the female and male subsets into five subsamples each, once along the levels of the factor generation and once along the levels of the factor vowel. I then carried out a second series of follow-up regression analyses, testing, on the one hand, the effect of vowel for each generation and, on the other hand, that of generation for each vowel. In each case, speaker and lexical item were included as random effects. Table 7.3 contains a summary of the results for the fixed predictors. Values from different analyses are separated by horizontal lines, with the first two columns (øgenderø and øvowel/gen subsampleø) indicating to which subset of data each model was fit. Each row shows the estimate of the F1 difference between two factor levels for a particular subsample. The first of these is the one selected as reference level by the model in question (either STRUT or gen1) and the second is the non-default level compared to the default level. Note that one comparison is missing from table 7.3: the estimate of the difference between FOOT and NURSE. This is because the `lmer` output table does not list comparisons between non-default levels. Since the relative positions of FOOT and NURSE were similar across speaker groups and had a relatively low diagnostic value for the three input varieties, no further follow-up analyses were undertaken for this vowel pair.

Table 7.3 Summary of the fixed-effect estimates from the second series of follow-up analyses for Lobanov-normalised F1, investigating the effect of vowel and generation for each gender separately. Non-significant differences are marked in grey.

gender	vowel/gen subsample	factor levels compared	fixed effects							
			Estimate	Std. Error	t value	MCMCmean	HPD95lower	HPD95upper	pMCMC	p Bonf.
female	gen1	STRUT ó FOOT	-1.361	0.145	-9.376	-1.322	-1.547	-1.096	0.0001	0.0014
		STRUT ó NURSE	-0.276	0.104	-2.662	-0.265	-0.420	-0.103	0.001	0.014
	gen2	STRUT ó FOOT	-0.805	0.087	-9.295	-0.808	-0.953	-0.664	0.0001	0.0014
		STRUT ó NURSE	0.641	0.056	11.526	0.632	0.542	0.729	0.0001	0.0014
	STRUT	gen1 ó gen2	-0.413	0.145	-2.846	-0.405	-0.691	-0.093	0.0138	0.1932
	NURSE	gen1 ó gen2	0.466	0.149	3.123	0.475	0.185	0.753	0.003	0.042
	FOOT	gen1 ó gen2	0.092	0.093	0.996	0.093	-0.087	0.289	0.2944	1
male	gen1	STRUT ó FOOT	-1.230	0.130	-9.485	-1.227	-1.415	-1.041	0.0001	0.0014
		STRUT ó NURSE	-0.098	0.076	-1.289	-0.108	-0.227	0.008	0.0764	1
	gen2	STRUT ó FOOT	-0.566	0.109	-5.185	-0.559	-0.741	-0.393	0.0001	0.0014
		STRUT ó NURSE	0.553	0.071	7.750	0.568	0.448	0.686	0.0001	0.0014
	STRUT	gen1 ó gen2	-0.527	0.117	-4.490	-0.526	-0.767	-0.283	0.0006	0.0084
	NURSE	gen1 ó gen2	0.190	0.187	1.019	0.172	-0.168	0.534	0.2984	1
	FOOT	gen1 ó gen2	-0.013	0.224	-0.060	0.005	-0.308	0.353	0.9756	1

For the factor levels listed in the table, the results largely confirm the patterns of variation which emerged from the graphical inspection of the data. The STRUT-FOOT pair exhibits negative coefficient estimates for all four speaker groups (-1.361 for gen1f; -0.805 for gen2f; -1.23 for gen1m; and -0.566 for gen2m). This indicates that FOOT has lower F1 values and is therefore higher than STRUT across generations and genders, a difference which is statistically very significant in each case (Bonferroni-adjusted  $p = 0.0014$ ). The STRUT-NURSE pair, on the other hand, displays more variation. For both second-generation female and male speakers, the positive coefficient estimates (0.641 for gen2f and 0.553 for gen2m) and very significant  $p$ -values (Bonferroni-adjusted  $p = 0.0014$  in both cases) confirm that NURSE has higher F1 values and is thus lower than STRUT. For first-generation speakers, the negative coefficient values (-0.276 for gen1f and -0.098 for gen1m) indicate that NURSE is (slightly) higher than STRUT. The difference is significant for female speakers (Bonferroni-adjusted  $p = 0.014$ ) but not for male speakers (Bonferroni-adjusted  $p = 1$ ), which suggests that for the latter group this may be a chance effect.

Most of the remaining estimates lend support to the tendencies visible in the plots as well. For STRUT, the negative gen1-gen2 coefficient values (-0.413 for female and -0.527 for male speakers) show that this vowel is higher for the second generation than for the first across genders. Considering the Lobanov-normalised group means in figure 7.7, it is perhaps surprising that this cross-generational difference is significant for male speakers (Bonferroni-adjusted  $p = 0.0084$ ) but not for female speakers (Bonferroni-adjusted  $p = 0.1932$ ). An examination of the distribution of the normalised data reveals, however, that, while the average F1 frequency of STRUT is indeed lower for gen2f than for gen1f, the range of F1 values is much larger for the former group, so that it encompasses those of the latter (cf. the boxplot in appendix II). For NURSE, the positive gen1-gen2 coefficient estimates (0.466 for female and 0.19 for male speakers) suggest that this vowel is lower for gen2 than gen1 across genders. The difference is much more pronounced for the female than the male group though. For this reason, it results in being statistically significant for the former but not for the latter (Bonferroni-adjusted  $p = 0.042$  and Bonferroni-adjusted  $p = 1$ , respectively). Lastly, the follow-up analyses for FOOT indicate that the F1 difference between first- and second-generation speakers is not significant for either gender (Bonferroni-adjusted  $p = 1$ ).

Moving on to the front-back dimension, a likelihood ratio chi-squared test indicated that for Lobanov-normalised F2, the three-way interaction between vowel, generation and gender was not statistically significant (Chisq = 3.971,  $df = 2$ ,  $p = 0.1373$ ). Of the three two-

way interactions, the one between vowel and gender and the one between generation and gender were not significant either (Chisq = 0.891, df = 2, p = 0.6404; and Chisq = 2.995, df = 1, p = 0.0835, respectively), whereas the one between vowel and generation was highly significant (Chisq = 231.022, df = 2, p < 0.001). To obtain more accurate coefficient estimates, I therefore refitted the model excluding the non-significant interaction terms but including the vowel x generation interaction. This model is shown in table 7.4.

The likelihood ratio chi-squared tests for the random effects showed that both lexical item and speaker once again significantly contribute to explaining variation in the dataset (lexical item: Chisq = 656.58, df = 1, p < 0.001; speaker: Chisq = 62.436, df = 1, p < 0.001). The standard deviation values estimated for lexical item (0.345), speaker (0.122) and the residual error (0.434) are not directly comparable to the values given for the corresponding F1 parameters but nevertheless point to similar degrees of variability. The estimates for lexical item and speaker indicate that, under a normal distribution, 95% of the words and speakers belonging to the larger populations from which this sample is drawn would fall within  $\pm 0.69$  and  $\pm 0.244$  z-scores from the mean, respectively. These rather large value ranges suggest that, although part of the variability in F2 frequencies is accounted for by the fixed effects, noticeable differences are still found between individual words and speakers. Likewise, the high standard deviation of the residual error (0.434) points to a considerable amount of unexplained variation.



Table 7.4 Results of the linear mixed-effects regression analysis estimating the influence of vowel, generation and gender on Lobanov-normalised F2.

Linear mixed model fit by REML							
Model fit statistics							
	AIC	BIC	logLik	deviance	REMLdev	df	
	3363.666	3421.663	-1671.833	3314.953	3343.666	10	
Total N	2440						
Random effects							
	Variance	Std. Dev.	N				
lexical item	0.119	0.345	408				
speaker	0.015	0.122	23				
residual	0.189	0.434	n.a.				
Fixed effects							
	Estimate	Std. Error	t value	MCMCmean	HPD95lower	HPD95upper	pMCMC
intercept	-0.542	0.062	-8.736	-0.530	-0.646	-0.418	0.0001
vowel: FOOT	-0.402	0.084	-4.778	-0.372	-0.508	-0.236	0.0001
vowel: NURSE	0.032	0.056	0.577	0.025	-0.068	0.116	0.5838
generation: second	-0.057	0.059	-0.956	-0.063	-0.180	0.049	0.2692
gender: male	0.010	0.055	0.191	0.013	-0.095	0.118	0.7984
vowel: FOOT x generation: second	0.585	0.058	10.013	0.570	0.451	0.687	0.0001
vowel: NURSE x generation: second	0.632	0.044	14.409	0.632	0.543	0.718	0.0001
Overall significance of factors and their interactions*							
	Chisq	Chi Df	p				
gender	0	1	1				
vowel: generation	231.022	2	0.0000				

\*assessed via likelihood ratio chi-squared tests

As for the fixed effects, table 7.4 suggests that gender has no significant influence on F2 values in this sample. The coefficient estimate for the factor level gender: male (0.01) indicates that the mean F2 difference between female and male speakers is close to zero ó hence the extremely high p-value obtained from the likelihood ratio chi-squared test, listed at the bottom of the table ( $\text{Chisq} = 0$ ,  $\text{df} = 1$ ,  $p = 1$ ). The lack of a gender effect for F2 is clearly visible in figure 7.7, where, for each generation, the male and female vowels are located very closely to each other on the front-back dimension. The second term listed at the bottom of table 7.4, the two-way interaction between vowel and generation, is, as mentioned above, the only interaction between the three predictors that resulted being significant for F2. This means that the two generations exhibit different configurations of FOOT, STRUT and NURSE on the front-back dimension, and/or that the vowels underwent different cross-generational changes in F2 frequencies. To trace the cause(s) of this interaction, I split up the dataset once along the levels of the variable generation and once along the levels of the variable vowel. I then ran a series of follow-up regression analyses on the subsamples, investigating the effect of vowel for each generation and the effect of generation for each vowel. A summary of the results for the fixed effects is shown in table 7.5.

Table 7.5 Summary of the fixed-effect estimates from the follow-up analyses for Lobanov-normalised F2, examining the effect of vowel and generation. Non-significant differences are marked in grey.

vowel/gen subsample	factor levels compared	fixed effects							
		Estimate	Std. Error	t value	MCMCmean	HPD95lower	HPD95upper	pMCMC	p Bonf
gen1	STRUT ó FOOT	-0.289	0.100	-2.890	-0.243	-0.394	-0.095	0.0016	0.0112
	STRUT ó NURSE	-0.014	0.065	-0.221	-0.011	-0.105	0.086	0.8126	1
gen2	STRUT ó FOOT	0.031	0.094	0.327	0.082	-0.067	0.217	0.2556	1
	STRUT ó NURSE	0.638	0.061	10.433	0.633	0.539	0.727	0.0001	0.0007
STRUT	gen1 ó gen2	-0.072	0.064	-1.126	-0.080	-0.211	0.050	0.2182	1
NURSE	gen1 ó gen2	0.588	0.073	8.048	0.572	0.443	0.702	0.0001	0.0007
FOOT	gen1 ó gen2	0.557	0.128	4.343	0.537	0.316	0.777	0.0001	0.0007

The first vowel pair listed in the table, STRUT-FOOT, represents one of the few cases in which the estimates of the mixed-effects regression analysis seem to contradict the tendencies visible in the graphical representation of the data. For both generations, the direction of the correlation is in line with the plot in figure 7.7: for the first generation, the negative coefficient value (-0.289) indicates that FOOT is more back than STRUT; and for the second generation, the positive coefficient estimate (0.031) suggests that the opposite is the case. However, while the F2 difference between the two vowels is evaluated as significant for the first generation (Bonferroni-adjusted  $p = 0.0112$ ), for the second generation the estimate is close to zero and clearly non-significant (Bonferroni-adjusted  $p = 1$ ). This is not in line with the distribution of observed values, as the mean F2 difference between STRUT and FOOT is three to four times larger for the second generation than for the first (0.376 and 0.107  $z$ -scores, respectively) and the F2 value ranges of the two vowels differ more for gen2 than for gen1 (cf. the boxplot showing the distribution of the Lobanov-normalised data in appendix II). Such discrepancies may result from the mixed model controlling for imbalances in the dataset as well as for inter-word/-speaker variability. Note, in particular, the predominance of *good* tokens in the dataset, which represent 46.7% of all instances of FOOT and have a considerably higher mean F2 value for the second generation (0.238  $z$ -scores) than the first (-0.596  $z$ -scores). If one refits the gen1 and gen2 models without word as a random effect (that is, without a parameter controlling for the biasing effect highly frequent lexical items can have on group estimates), the estimate of the STRUT-FOOT difference for the first generation decreases to -0.124  $z$ -scores and becomes non-significant (Bonferroni-adjusted  $p = 0.0728$ ), whereas the one for the second generation increases to 0.373  $z$ -scores and becomes highly significant (Bonferroni-adjusted  $p < 0.001$ ). This shows how mixed modelling can help controlling for such influences in order to obtain more accurate coefficient values.

The other values reported in table 7.5 confirm the trends discussed earlier. For the first generation, the F2 difference between STRUT and NURSE is estimated at -0.014, a value which is close to zero and far from reaching statistical significance (Bonferroni-adjusted  $p = 1$ ). For the second generation, the positive coefficient value (0.638) indicates that NURSE has higher F2 values and is therefore more front than STRUT. In line with the large difference visible in the F1-F2 plot, this estimate is highly significant (Bonferroni-adjusted  $p = 0.0007$ ). As regards F2 changes of individual vowels across generations, the negative gen1-gen2 coefficient value for STRUT (-0.072) suggests that this vowel has lower F2 values and is thus more back for the second generation than the first but, at the same time, that the difference is too small to be

statistically significant (Bonferroni-adjusted  $p = 1$ ). For NURSE and FOOT, on the other hand, the positive coefficient estimates (0.588 and 0.557, respectively) and small  $p$ -values (Bonferroni-adjusted  $p = 0.0007$  in both cases) confirm that the two gen2 vowels are considerably more front than their gen1 counterparts and that the differences are highly significant.

When considered together, the results of the mixed-effects regression analyses for F1 and F2 may give some insight into the phonemic status of FOOT, STRUT and NURSE among the East African Indian participants of this study. The statistical analyses indicate that all four speaker groups have a qualitative contrast between FOOT and STRUT: if not on the front-back dimension, the two vowels are (at group level at least) invariably distinct in terms of vowel height, with FOOT being significantly higher than STRUT across generations and genders. The degree of qualitative distinction between STRUT and NURSE appears to vary across groups. For the second generation, the two vowels are clearly different phonemes in that NURSE is significantly more front and lower than STRUT. For first-generation male participants, neither the F1 nor the F2 difference between STRUT and NURSE is statistically significant, which suggests that this group has no qualitative distinction between the two vowels. First-generation female speakers display no significant F2 difference between STRUT and NURSE either but do differ from gen1 male participants in having a significant F1 difference. Whether this gender difference in statistical significance may indicate that, in contrast to the gen1 male group, the gen1 female group has a qualitatively distinct STRUT-NURSE pair is discussed in section 7.2.1 below.

Before moving on to the results for vowel duration, I return to the main F1 and F2 models presented in tables 7.2 and 7.4 and consider model assumptions and evaluation. As noted earlier, linear regression, including linear mixed-effects regression, requires the values in each subsample to be normally distributed, an assumption which is largely met in the present dataset. Two other major assumptions of this type of statistical technique are that the variances of the residuals, i.e. of the differences between the observed and predicted values, are homogeneous and that the residuals approximately follow a normal distribution (Gries 2009: 253, 270-2; Baayen 2008: 188-93, 256-8). Figures 7.9 and 7.10 show two diagnostic plots for the F1 and F2 model, respectively: a scatter plot of the residuals against the fitted (i.e. predicted) values on the left and a plot of the quantiles of the residuals against the quantiles of the standard normal distribution on the right. The scatter plots are used to check the assumption of constant variance. Gries (2009: 270) points out that ideally, the plot would

show a scattercloud without much structure, especially no structure such that the dispersion of the values increases or decreases from left to right, and moreover, that the residuals should be distributed around the mean of 0. The scatter plots in figures 7.9 and 7.10 reveal that for both F1 and F2, the residuals are indeed well-distributed around 0. The scattercloud for F2 has no structure. In the plot for F1 one can detect, in addition to the main scattercloud, a small cloud around -1 z-scores and a slight increase of the residuals from left to right. While this suggests that for F1 the variance is somewhat greater for higher frequencies than for lower frequencies, the difference still falls within acceptable limits.

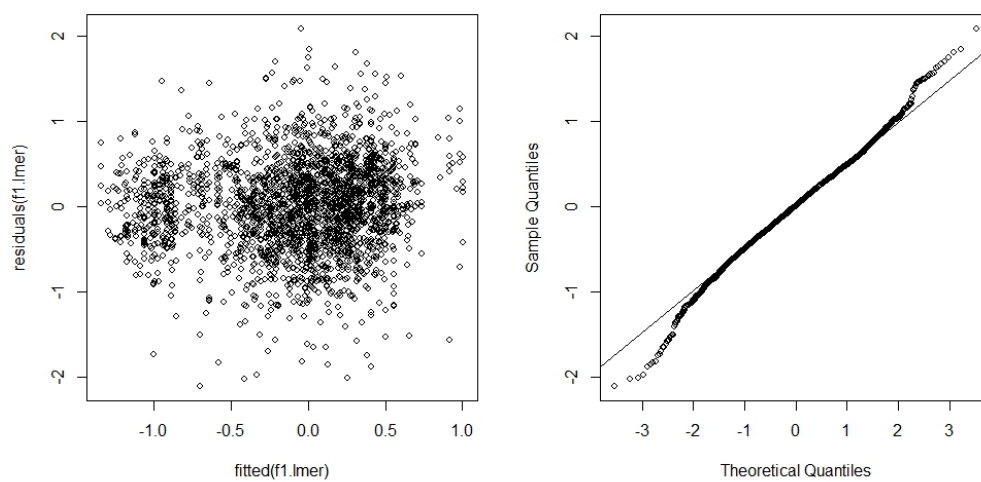


Figure 7.9 Residual diagnostic plots of the linear mixed-effects regression model for F1 (cf. table 7.2).

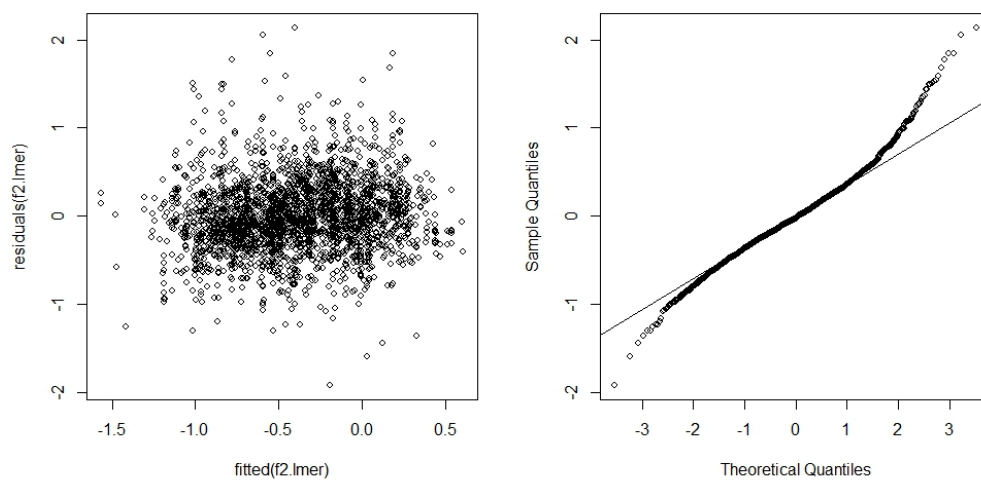


Figure 7.10 Residual diagnostic plots of the linear mixed-effects regression model for F2 (cf. table 7.4).

The quantile-quantile plots provide an indication as to whether the residuals meet the normality assumption: the better the dots fit the straight lines in the graphs, the more closely the residuals follow a normal distribution (Baayen 2008: 72; Gries 2009: 270). The plots in figures 7.9 and 7.10 suggest that there is some deviation from normality for both F1 and F2, as more extreme values fit the lines somewhat less well than central values. This deviation appears to be greatest for higher F2 frequencies, but even in this case, it still falls within the range typically observed for natural language data and does not constitute a serious concern. With regard to model evaluation, these deviations from normality suggest that both the F1 and F2 models have some difficulty in fitting more extreme formant values, which is probably due to the effect of outlier values in the dataset.

A measure commonly used to assess the goodness of fit of a model in traditional regression analysis is  $R^2$ , the squared correlation between the observed and predicted values, which represents the proportion of variance accounted for by the model (Baayen 2008: 172). The  $R^2$  values obtained for the F1 and F2 models fitted here (0.487 and 0.529, respectively) suggest that the models explain roughly 50% of the variability displayed by F1 and F2. It is important to bear in mind, however, that these values are not directly comparable to the  $R^2$  values computed for ordinary linear regression models: whereas the latter express the variance accounted for by the fixed effects, in mixed-effects regression different sources of variability are modeled together, so that  $R^2$  represents the variance due to both fixed and random effects (Baayen 2008: 258; but note that some authors, e.g. Johnson 2008: 237-9, do use this measure to compare the overall fit of ordinary and mixed linear models).

## **7.1.2 Vowel duration**

### **7.1.2.1 Untransformed and log-transformed data**

Like vowel formant frequencies, vowel duration in spontaneous conversation data is affected by a great many factors (cf. the discussions in Di Paolo et al. 2011: 98; Thomas 2011: 143-4). At word-level, these include the number of syllables, vowel quality, as well as phonetic context: vowels in longer words usually have shorter durations, tense vowels are longer than lax vowels and low vowels are longer than high vowels, and, finally, vowels before voiced

consonants are frequently almost 50% longer than vowels before voiceless consonants (Thomas 2011: 144). At discourse level, vowels tend to be lengthened before a pause and there is a general tendency in actual conversations for people to speed up or slow down over the course of a sentence, to emphasize one word in the sentence, as a preface to a word search or other hesitation phenomenon (Di Paolo et al. 2011: 98). Furthermore, speakers may use vowel duration to emphasise words for stylistic purposes, e.g. to signal emotional involvement, or to highlight the importance of a statement, and vowel length is of course also determined by individuals' overall rate of speech.

It may be assumed, though, that the effect of these sources of variation will be at least partly evened out if the sample is large enough. This appears indeed to be the case in the present study: the boxplots in figures 7.11-7.12 show that in spite of all this variability, noticeable differences in the distribution of the duration values of the three vowels emerge across speaker groups (as indicated by the different median and mean values and the small amount of overlap between the interquartile ranges). A first observation that can be made is that female speakers invariably produce longer duration values than male speakers. On average, the difference is 17 milliseconds or 15.9% (cf. also the mean values reported in appendix IV). Nonetheless, both genders exhibit the same cross-generational similarities and differences. On the one hand, first- and second-generation participants are alike in that STRUT is the shortest vowel for both groups, followed by FOOT and then NURSE. On the other hand, they are distinguished by the degree of durational differences between the vowels: the difference between FOOT and STRUT is greater for the first generation, whereas the difference between NURSE and the other two vowels is greater for the second generation.

The graphs also show, however, that, in contrast with the formant data (cf. figures 7.1-7.4), the distribution of duration values is noticeably skewed. For most subsamples, the whiskers on the upper side of the interquartile boxes are longer than those on the lower side; moreover, outlier dots are exclusively found at the higher end of the value range. This indicates that, rather than following a normal distribution, the duration data displays an asymmetrical pattern, with the majority of values concentrated at the lower end of the range and a few vowel tokens displaying much longer-than-average durations. Note, in particular, that for second-generation female speakers there is one lonely NURSE token with a duration value of 545 ms, which exceeds all other values in the dataset by far. This vowel token occurred in the course of the utterance *If I had known that language [Hindi] (pause) my life in India would be superb* and represents a rather extreme example of prepausal lengthening



(Thomas 2011: 144). At this point of the interview, the speaker, speaker C, was emotionally very involved in the conversation and pronounced the word *superb* with special emphasis, stressing both the first and the second syllable.

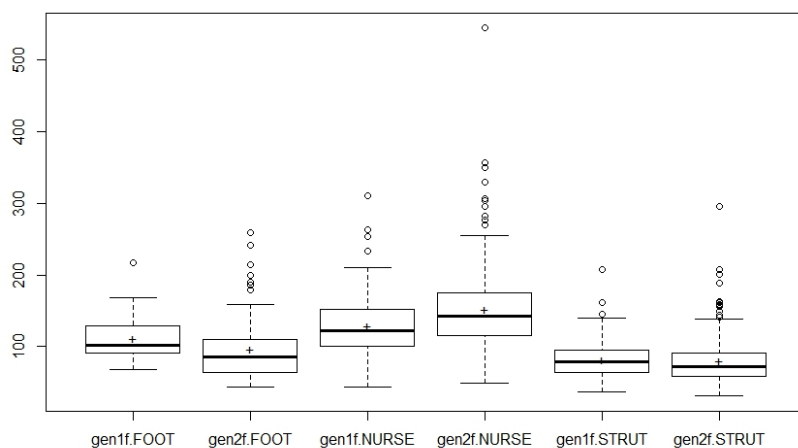


Figure 7.11 Boxplot of the duration values of FOOT, STRUT and NURSE for first- and second-generation female speakers (in ms).

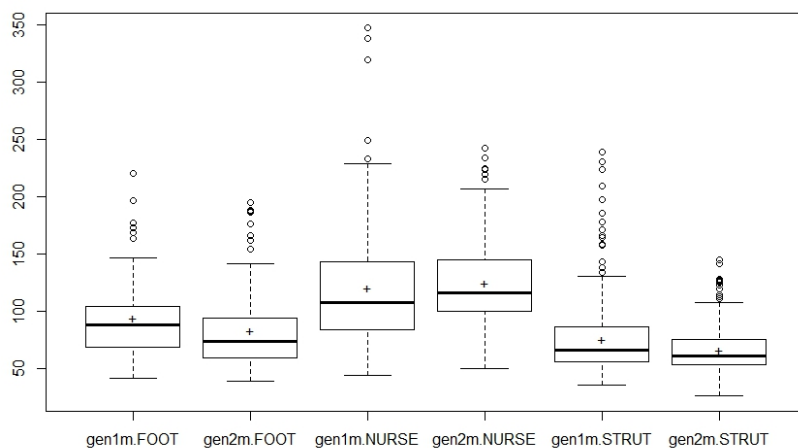


Figure 7.12 Boxplot of the duration values of FOOT, STRUT and NURSE for first- and second-generation male speakers (in ms).

This asymmetrical distribution was problematic for the statistical analysis because, as Baayen (2008: 31) points out, in linear regression  $\delta$  just a few extreme outliers might dominate the

outcome, partially or even completely obscuring the main trends characterizing the majority of data points. In order to eliminate at least part of the skewing, I removed the NURSE token described above from the sample and applied a logarithmic transformation to the data. Figure 7.13 shows the distribution of untransformed and log-transformed duration values (in the upper and lower plots, respectively). The four graphs indicate that the logarithmic transformation and removal of the most extreme outlier succeeded in reducing the skewness of the data. In the density plots on the left, the curve representing the distribution of the untransformed duration values has a markedly thicker right tail, so that the peak of the curve is squeezed against the vertical axis. With the logarithmic transformation, the curve becomes more symmetrical and is moved towards the centre of the plot. It now has two bumps rather than one, which may be related to the presence of long and short vowels in the dataset, but since the two peaks are close to each other, this does not constitute a serious concern. Furthermore, in the quantile-quantile plots on the right, the log-transformed data points fit the line considerably better than the untransformed data points.

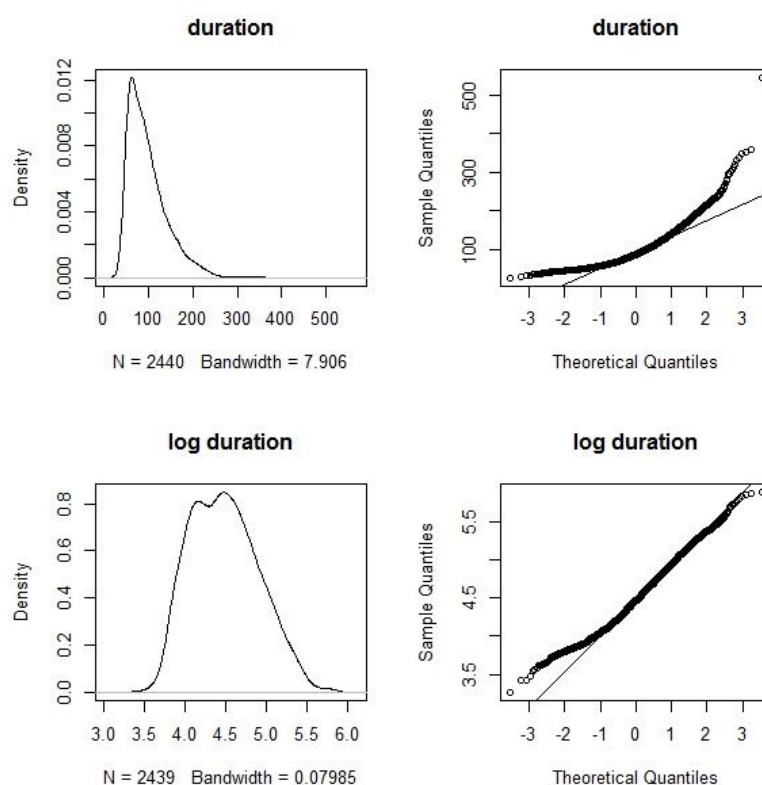


Figure 7.13 Density and quantile-quantile plots showing the distribution of untransformed and log-transformed duration values.

### 7.1.2.2 Linear mixed-effects regression analysis for vowel duration

Since the log-transformed values sufficiently approximated a normal distribution, I fitted a linear mixed-effects model to the data in order to assess the influence of vowel, generation, and gender, as well as the effect of the interactions between these predictors, on vowel duration (cf. section 5.4.2). As in the previous regression analyses, speaker and lexical item were included as random effects. The likelihood ratio chi-squared tests estimating the statistical significance of the four interactions indicated that the one between vowel and generation was highly significant, while the other three were non-significant (vowel x generation:  $\text{Chisq} = 92.015$ ,  $\text{df} = 2$ ,  $p < 0.001$ ; vowel x gender:  $\text{Chisq} = 0.762$ ,  $\text{df} = 2$ ,  $p = 0.683$ ; generation x gender:  $\text{Chisq} = 0.000$ ,  $\text{df} = 1$ ,  $p = 1$ ; vowel x generation x gender:  $\text{Chisq} = 3.784$ ,  $\text{df} = 2$ ,  $p = 0.1508$ ). Following the usual procedure, I refitted the model without the non-significant interaction terms. The final model for vowel duration is shown in table 7.6. Note that, whereas for the F1 and F2 models the `lmer` function returned coefficient estimates in *z*-scores, they are expressed in log-transformed milliseconds in table 7.6.

According to the likelihood ratio-chi squared tests for the random effects, both lexical item and speaker significantly contribute to explaining variation in vowel duration (lexical item:  $\text{Chisq} = 411.104$ ,  $\text{df} = 1$ ,  $p < 0.001$ ; speaker:  $\text{Chisq} = 212.996$ ,  $\text{df} = 1$ ,  $p < 0.001$ ). Compared to the fixed-effects estimates, the standard deviations of the two random terms (0.175 for lexical item and 0.1 for speaker) in fact once again point to considerable inter-word and inter-speaker variability, indicating that in the larger populations from which this sample is taken, 95% of the words and speakers would be within  $\pm 0.35$  and  $\pm 0.2$  log-transformed milliseconds away from the mean, respectively. Moreover, the even higher standard deviation estimate for the residual error (0.263) suggests that quite a large amount of variance in the dataset can be explained neither by the fixed effects nor by differences across individual lexical items and speakers.

Table 7.6 Results of the linear mixed-effects regression analysis estimating the influence of vowel, generation and gender on vowel duration (log-transformed).

<b>Linear mixed model fit by REML</b>							
<b>Model fit statistics</b>							
	<b>AIC</b>	<b>BIC</b>	<b>logLik</b>	<b>deviance</b>	<b>REMLdev</b>	<b>df</b>	
	855.797	913.790	-417.898	801.014	835.797	10	
<b>Total N</b>	2439						
<b>Random effects</b>							
	<b>Variance</b>	<b>Std. Dev.</b>	<b>N</b>				
lexical item	0.031	0.175	407				
speaker	0.010	0.100	23				
residual	0.069	0.263					
<b>Fixed effects</b>							
	<b>Estimate</b>	<b>Std. Error</b>	<b>t value</b>	<b>MCMCmean</b>	<b>HPD95lower</b>	<b>HPD95upper</b>	<b>pMCMC</b>
intercept	4.438	0.046	97.139	4.427	4.338	4.512	0.0001
vowel: FOOT	0.120	0.047	2.585	0.128	0.054	0.204	0.0006
vowel: NURSE	0.418	0.031	13.482	0.424	0.372	0.474	0.0001
generation: second	-0.107	0.046	-2.319	-0.102	-0.196	-0.015	0.0292
gender: male	-0.139	0.043	-3.195	-0.139	-0.223	-0.054	0.0026
vowel: FOOT x generation: second	-0.001	0.035	-0.017	-0.011	-0.082	0.056	0.7494
vowel: NURSE x generation: second	0.245	0.026	9.298	0.227	0.174	0.280	0.0001
<b>Overall significance*</b>							
	<b>Chisq</b>	<b>Chi Df</b>	<b>p</b>				
gender	9.297	1	0.0023				
vowel x generation	92.015	2	0.0000				

\*assessed via likelihood ratio chi-squared tests

With regard to the fixed effects, the negative coefficient value of the level gender: male (-0.139) confirms the pattern which emerged from the boxplots in figures 7.11 and 7.12: across vowels and generations, male speakers consistently display shorter duration values than female speakers (the reference level). Although the difference between the genders is not very large, this effect is strong enough to reach statistical significance ( $\text{Chisq} = 9.297$ ,  $\text{df} = 1$ ,  $p = 0.0023$ ). The presence of the highly significant interaction between vowel and generation indicates that, as with F1 and F2, the effects of the two predictors on vowel duration are not independent of each other and need to be investigated further. I therefore divided the dataset once along the levels of the variable generation and once along the levels of the variable vowel and carried out a series of mixed-effects regression analyses on the resulting five subsamples, looking at the effect of vowel for each generation and at the effect of generation for each vowel. Table 7.7 shows the usual summary of the results for the fixed effects.

Table 7.7 Summary of the fixed-effect estimates from the follow-up analyses for vowel duration (log-transformed), examining the effect of vowel and generation.  
Non-significant differences are marked in grey.

subsample	factor levels compared	fixed effects							
		Estimate	Std. Error	t value	MCMCmean	HPD95lower	HPD95upper	pMCMC	p Bonf
gen1	STRUT ó FOOT	0.157	0.058	2.706	0.163	0.072	0.247	0.001	0.007
gen1	STRUT ó NURSE	0.456	0.038	12.013	0.449	0.393	0.506	0.0001	0.0007
gen2	STRUT ó FOOT	0.101	0.046	2.213	0.105	0.034	0.183	0.0066	0.0462
gen2	STRUT ó NURSE	0.630	0.030	21.185	0.629	0.581	0.678	0.0001	0.0007
STRUT	gen1 ó gen2	-0.105	0.054	-1.946	-0.100	-0.205	-0.001	0.0556	0.3892
NURSE	gen1 ó gen2	0.145	0.061	2.368	0.133	0.013	0.239	0.0238	0.1666
FOOT	gen1 ó gen2	-0.105	0.088	-1.199	-0.113	-0.255	0.036	0.1316	0.9212

For the first generation, the positive coefficient estimates of the STRUT-FOOT and STRUT-NURSE pairs confirm that both FOOT and NURSE are longer than the default level STRUT. Although the estimated durational difference between STRUT and FOOT (0.157) is roughly three times smaller than the one between STRUT and NURSE (0.456), both are large enough to be statistically significant (Bonferroni-adjusted  $p = 0.007$  and Bonferroni-adjusted  $p = 0.0007$ , respectively). The picture is similar for the second generation: the positive coefficient values indicate that both FOOT and NURSE have longer durations than STRUT, and the estimated difference between STRUT and FOOT (0.101) is much less pronounced than the one between STRUT and NURSE (0.630). It is, in fact, more than six times smaller than the latter, so that, whereas the STRUT-NURSE difference is highly significant (Bonferroni-adjusted  $p = 0.0007$ ), the difference between STRUT and FOOT is very close to the conventional significance threshold level of 5% (Bonferroni-adjusted  $p = 0.0462$ ). As regards the durational changes of individual vowels across generations, the negative gen1-gen2 coefficient values given for STRUT and FOOT (-0.105 in both cases) suggest that the two vowels are shorter for the second generation than the first, whereas the positive gen1-gen2 coefficient estimate obtained for NURSE (0.145) indicates that this vowel exhibits an opposite trend, having longer duration values for the second generation than the first. This lends some support to the tendencies revealed by the graphical inspection of the data; one has to bear in mind, however, that none of these differences reaches statistical significance after a type I error correction (STRUT: Bonferroni-adjusted  $p = 0.3892$ ; NURSE: Bonferroni-adjusted  $p = 0.1666$ ; FOOT: Bonferroni-adjusted  $p = 0.9212$ ).

Finally, figure 7.14 provides some indication as to whether the duration model presented in table 7.6 meets the main assumptions of linear mixed-effects regression (see section 7.1.1.3 for a brief explanation of the two graphs). With the exception of a few outliers, the residuals in the plot on the left are well-distributed around the mean of 0 and form a scattercloud with little structure, which suggests that the assumption of homogeneous variances is met. In the quantile-quantile plot on the right, extreme values (particularly those at the higher end of the range) follow the straight line somewhat less closely than the other values, pointing to some degree of deviation from normality, but on the whole, the distribution of the residuals sufficiently approximates a normal distribution. In terms of goodness of fit, these deviations indicate that, as was the case for the F1 and F2 models, the duration model works less well when it comes to fitting extreme duration values.  $R^2$ , the squared correlation between the observed and predicted values, is 0.649.

This suggests that, taken together, the fixed and random effects included in the model account for around 65% of the variance in the dataset.

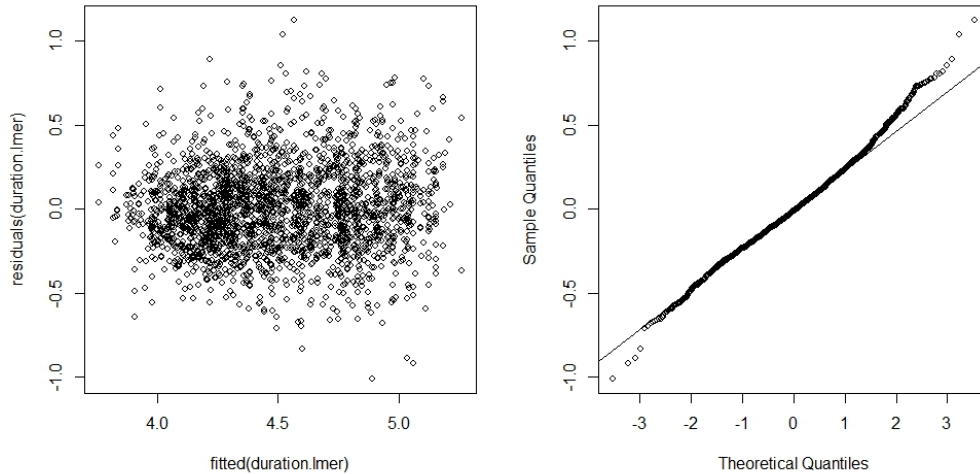


Figure 7.14 Residual diagnostic plots of the linear mixed-effects regression model for log-transformed vowel duration (cf. table 7.6).

## 7.2 Discussion

In the following, I seek to relate the results of the acoustic analysis of FOOT, STRUT and NURSE to the patterns reported for these vowels in Indian English, East African English and East Midlands English (cf. section 4.2.4). Several difficulties arise when attempting such a comparison. In particular, qualitative descriptions vary greatly in the precision of phonetic transcriptions, and quantitative acoustic investigations of the vowel systems of these varieties are as yet relatively rare. Moreover, where acoustic findings are available, differences in method often limit comparability across studies (the potential impact of methodological decisions is considered at the beginning of section 7.2.1.1 below). Nevertheless, I argue that a comparison with patterns attested in previous research on the three input varieties can provide further insight into whether and how they have influenced the dialect spoken by East African Indians in Leicester.

The results for vowel quality and vowel duration are considered in turn. In the discussion of vowel quality, plots from previous instrumental phonetic investigations of



Indian English, East African English and East Midlands English are reproduced for illustrative purposes. While this facilitates comparison, two important caveats have to be added: firstly, as in the present study, the vowel systems shown in these plots are based on measurements from relatively small numbers of speakers; and secondly, when comparing plots from different studies visually, one has to bear in mind that the use of different scales or normalisation methods is also likely to have some impact on the results (e.g. raw formant data in Maxwell & Fletcher 2009; Bark-transformed values in Wiltshire & Harnsberger 2006; and Lobanov-normalised measurements in this study; see section 5.3.3).

## **7.2.1 Vowel quality**

### **7.2.1.1 First generation**

The presence or absence of qualitatively distinct FOOT-STRUT and STRUT-NURSE pairs is of considerable diagnostic value in tracing the relative influence of Indian English, East African English and East Midlands English on the variety of English spoken by East African Indians in Leicester. Before comparing the first generation's production of FOOT, STRUT and NURSE to the patterns attested for these vowels in the three input varieties, it is therefore crucial to examine the results presented in section 7.1.1 critically. Important questions in this regard are: do they represent a reliable indication of the presence or absence of a qualitative contrast between the FOOT-STRUT and STRUT-NURSE pairs among first-generation participants, and to what extent may methodological choices have affected the findings?

The results for the FOOT-STRUT pair leave little room for doubt. Both the graphical inspection of the data and the statistical analysis demonstrated that the two vowels have clearly different qualities, with FOOT being significantly higher and slightly but significantly more back than STRUT for both female and male participants. The case of the STRUT-NURSE pair, on the other hand, is complicated by gender-related variation. As shown in section 7.1.1, neither female nor male speakers display a significant difference between STRUT and NURSE on the front-back dimension; however, whereas for the male group the two vowels have roughly the same height, for the female group NURSE is somewhat higher than STRUT. This raises the question of whether the two groups are distinguished by the presence vs. absence of a qualitative contrast between STRUT and NURSE. It may be argued,

though, that the statistical significance of the F1 difference between gen1f STRUT and NURSE (Bonferroni-adjusted  $p = 0.014$ ) does not constitute very strong evidence for such a hypothesis. Neither the observed nor the estimated F1 difference between the two vowels (0.284 and 0.276  $z$ -scores) is very large, compared to, say, the observed and estimated F1 differences between STRUT and FOOT displayed by this group (1.275 and 1.361  $z$ -scores). Moreover, the  $p$ -value obtained via MCMC sampling is not too far from the conventional threshold level of 5%, and if one computes a  $p$ -value based on the  $t$ -statistic from the mixed linear model (-2.662; cf. table 7.3), using the total number of observations minus the number of fixed-effects parameters as degrees of freedom (475 minus 3; Baayen 2008: 248), the same STRUT-NURSE difference turns out to be non-significant (Bonferroni-adjusted  $p = 0.1125$ ). It therefore appears that while first-generation male speakers do not have a qualitative contrast between STRUT and NURSE, the case of first-generation female speakers is less clear-cut. What is beyond doubt, however, is that for both genders the difference between the phonetic qualities of STRUT and NURSE is very small, particularly when compared to their difference from the other vowels measured for this study (i.e. FOOT, FLEECE, START and TRAP; see figure 7.16).

An important question concerning the first generation's lack of a clear qualitative distinction between STRUT and NURSE is whether this result may not in part be a consequence of methodological decisions. This issue is particularly relevant if one considers that most acoustic investigations of the vowel systems of the three input varieties are based on word list data, whereas in the present study I used samples of spontaneous conversations (see section 5.3.1). As Thomas (2011: 138-9) points out, vowels are likely to be articulated more carefully, with heavier stress and longer duration, in word lists and, more generally, citation-form speech than in conversational speech. Moreover, word lists compiled for acoustic analyses are generally controlled for coarticulation effects, consisting of test words in which neighbouring segments have relatively little influence on the vowels' formant values (cf. e.g. Evans et al.'s 2007 use of *hood*, *hud*, *heard* for FOOT, STRUT, NURSE). As a consequence, the tokens in citation-form speech approximate their phonetic targets more closely than most tokens from conversational speech and hence show less coarticulation and undershoot, a phenomenon whereby, for various reasons, speakers fail to reach these phonetic targets (Thomas 2011: 138-9, 174). Since vowels can be expected to show less variation and to have more distinct qualities in word lists than spontaneous conversations, it is possible that in the present study the use of the latter type of data

contributed to the lack of a clear qualitative contrast between gen1 STRUT and NURSE. This question would certainly be worth further investigation in a follow-up study comparing, for instance, data from different Labovian styles (Labov 2006, 1972b).

Two other methodological decisions regarding token selection must be considered here, as they may also have led to a greater presence of undershoot and coarticulation phenomena in the dataset and hence to more centralised, less distinct qualities for STRUT and NURSE. Thomas (2011: 174-5) observes that a common type of undershoot is vowel reduction, ða phonetic process wherein vowels can become relatively more central as duration or stress decreasesö. In the acoustic analysis carried out for the present study, stress was controlled for by selecting vowel tokens from syllables with primary stress only (cf. section 5.3.1; but note that the stressed category itself was not entirely uniform, exhibiting some variation due to context-related emphasis and other factors). With regard to vowel length, I showed earlier that considerable variability is found in the dataset, and an inspection of the boxplots in figures 7.11 and 7.12 reveals that a number of vowel tokens have rather short duration values. Note in particular that for the first generation the 25% quartile of STRUT (which delimits the lowest 25% of the data) is 58.7 milliseconds. This value is remarkably close to the threshold adopted by Hall-Lew (2009: 132-3), who excluded tokens with durations of less than 60 milliseconds in order to avoid vowel reduction. This raises the question of the extent to which the presence of very short vowel tokens in the dataset may have influenced the phonetic quality of gen1 STRUT and NURSE.

The second methodological issue requiring closer examination is the decision of including all phonological environments in the analysis. As noted in section 5.3.1, this choice was motivated by reasons of consistency, on the one hand, and by the commonness of some contexts, on the other. It seems particularly important, though, to assess the extent to which coarticulation effects induced by following nasals (as in *come, sun, uncle, firm, turn*) may have affected the phonetic quality of STRUT and NURSE for the first generation. This is necessary not only because of the high frequency of this context in the sample but also because, as Schneider (2004: 1122) observes, ð[p]re-nasal and pre-lateral environments tend to strongly promote vocalic mergersö (see e.g. the *pin-pen* merger in Southern American English). As the following figures show, pre-nasal environments were particularly common for the STRUT vowel: for first-generation female speakers, 53.2% of the STRUT tokens (N=248) and 17.3% of the NURSE tokens (N=150) occurred in this

context, and for first-generation male speakers, 54.6% of the STRUT tokens (N=293) and 22.7% of the NURSE tokens (N=172) appeared before a nasal.

A simple way of testing whether these methodological decisions have contributed to the lack of a clear distinction between gen1 STRUT and NURSE is to exclude pre-nasal tokens and, following Hall-Lew (2009: 132-3), tokens which are shorter than 60 milliseconds from the dataset. This restriction reduces the sample of STRUT and NURSE tokens produced by the first generation by almost half (from 863 to 445). Figure 7.15 shows the means of STRUT and NURSE based on the original sample (in the plot on the left) and on the reduced sample (in the plot on the right). A comparison of the two plots indicates that the exclusion of pre-nasal and very short vowel tokens does not greatly affect the results: even though STRUT and NURSE are located in slightly different positions in the two plots and the distance between the two vowels increases a little for male speakers (but not for female speakers) in the reduced sample, all in all, the changes are minor. The evidence thus suggests that the similarity of the phonetic qualities of gen1 STRUT and NURSE cannot be attributed (solely) to phenomena such as vowel reduction and the influence of following nasals.

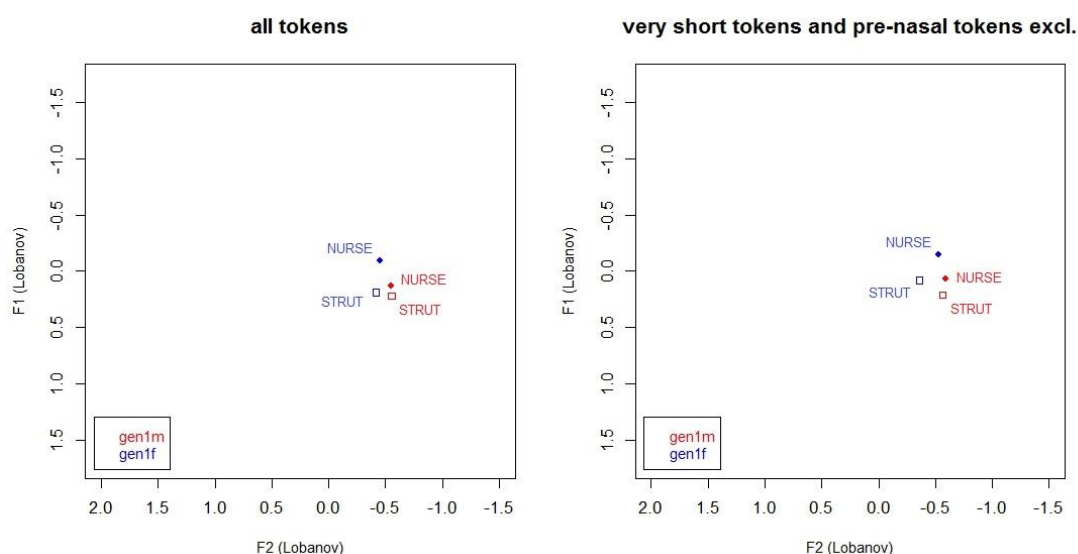


Figure 7.15 Mean F1 and F2 values of STRUT and NURSE for first-generation female and male speakers (Lobanov-normalised), based on the original sample (on the left) and on a reduced sample without very short and pre-nasal tokens (on the right).

Having considered the possible impact of methodological choices on first-generation participants' lack of a clearly distinct STRUT-NURSE pair, I now turn to

examining the similarities and differences between their production of FOOT, STRUT and NURSE and the patterns attested for these vowels in each input variety, beginning with Indian English. The vowel configurations of both female and male first-generation speakers (reproduced in figure 7.16 for convenience) display affinity with this variety in that, as discussed in section 4.2.4.1, Indian English exhibits a phonemic contrast between FOOT and STRUT but is commonly claimed to have no qualitative distinction between STRUT and NURSE. The parallels clearly emerge from a comparison between the gen1 vowels and the relative positions of FOOT, STRUT and NURSE in figure 7.17, which shows the unnormalised monophthongal vowel space of a male speaker of Indian English from a Hindi L1 background (Speaker ARK from Maxwell & Fletcher 2009: 60). Like first-generation East African Indians, this speaker clearly distinguishes FOOT (realised as [u]) and STRUT (realised as [ɐ]) but has no qualitative contrast between STRUT and NURSE (realised as [ɐ:]). This is evidenced by the fact that the ellipses of the two vowels overlap considerably and that the difference between their centroids is non-significant (Maxwell & Fletcher 2009: 62-63, 67).

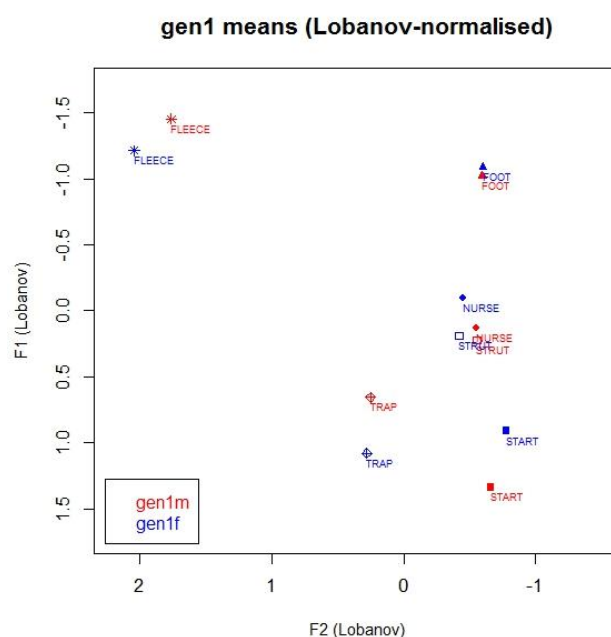


Figure 7.16 Mean F1 and F2 values of FOOT, STRUT and NURSE for first-generation female and male speakers (Lobanov-normalised). FLEECE, TRAP and START are shown as reference points.

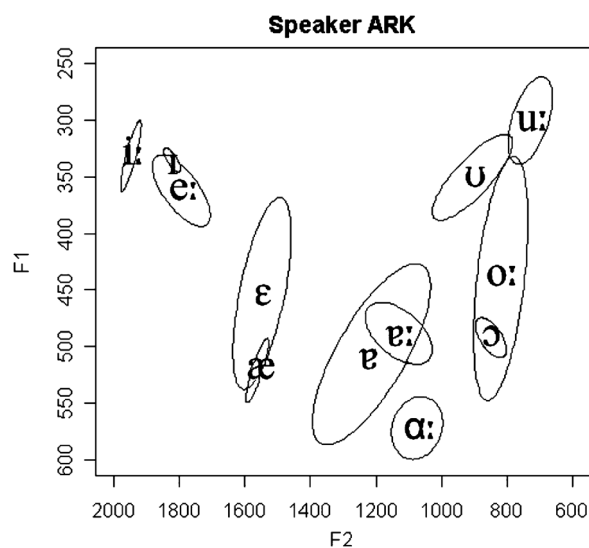


Figure 7.17 F1-F2 ellipse plot of the monophthongs produced by a Hindi L1 speaker of Indian English (in Hertz; from Maxwell & Fletcher 2009: 60). The ellipses represent 90% of the tokens that were measured and the IPA symbols the centroids of the respective vowels.

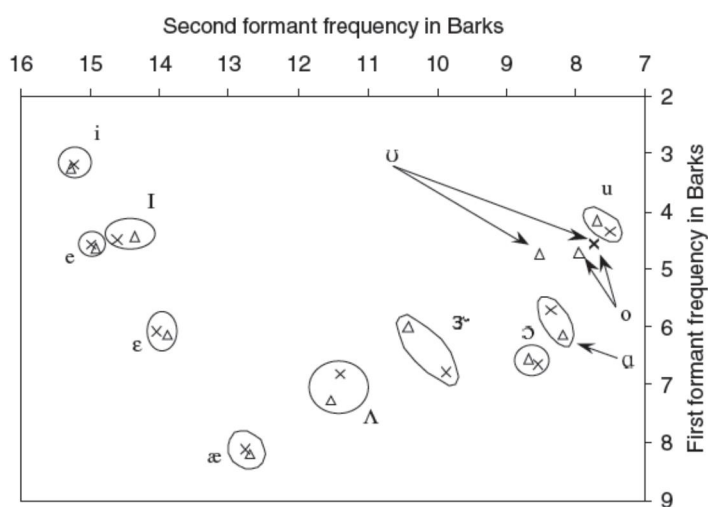


Figure 7.18 Mean F1 and F2 values of Gujarati English and Tamil English monophthongs, represented by Xs and triangles, respectively (in Bark units; from Wiltshire & Harnsberger 2006: 98).

While the absence of a qualitative contrast between STRUT and NURSE (and schwa) is widely reported for Indian English, it must be recalled that this variety displays considerable internal variation and that some groups of Indian English speakers appear to produce distinct qualities for these vowels. To recapitulate the evidence from the acoustic studies discussed in section 4.2.4.1: Maxwell & Fletcherø (2009) Hindi and Punjabi L1 informants were found to exhibit a great amount of overlap between STRUT and NURSE, but a qualitative distinction between the two vowels is attested for Tibeto-Burman L1 subjects (Wiltshire 2005), and the plot in Wiltshire & Harnsberger (2006: 98) indicates that the qualities of STRUT and NURSE differ for Gujarati English and Tamil English speakers as well. Given the predominance of informants from a Gujarati L1 background among the participants of the present study, Wiltshire & Harnsbergerø plot is reproduced in figure 7.18. Their graph shows the Bark-transformed group means of four female subjects for each subvariety. For the Gujarati English group, STRUT and NURSE have roughly the same height and are both located in the central region of the vowel space; they are different, however, in that STRUT is more front than NURSE.<sup>2</sup> The two vowels also appear to differ qualitatively for first-generation Gujarati migrants in London, with *hud*/STRUT being, however, somewhat lower and more back than *heard*/NURSE for this group (see the plot in Evans et al. 2007: 1743). Lastly, as regards other Indian diasporic communities, separate STRUT and NURSE phonemes are found in South African Indian English, whereas the two vowels were reported to have very similar qualities among (late) first-generation Bengali migrants in London (McCarthy et al. 2011: 1356).

The plots in Wiltshire & Harnsberger (2006) and Evans et al. (2007) raise the question of why the Gujarati L1 informants in these studies appear to have a clearer qualitative contrast between STRUT and NURSE than first-generation East African Indians do. It is possible that this difference may at least partly be related to the authorsø use of word list data, as opposed to the conversational data employed in the present study (see above). As discussed presently, however, even if they are less distinct in quality, gen1 STRUT and NURSE resemble the STRUT and NURSE vowels produced by the subjects of Wiltshire & Harnsberger (2006) and Evans et al. (2007) in that they are located roughly in the same region of the vowel space.

Beyond the presence or absence of qualitatively distinct FOOT-STRUT and STRUT-NURSE pairs, further insight into parallels to and differences from the input varieties may be

---

<sup>2</sup> Note, though, that no measures of dispersion are given in this plot.

gained from an examination of the phonetic quality of each vowel ó bearing in mind that remarks in this regard must necessarily remain speculative, since not all monophthongs were included in the analysis. As noted in section 4.2.4.1, the main variant for Indian English FOOT is [ʊ], which may, however, be more peripheral than RP [ʊ] and be indistinct from GOOSE for certain speakers. A great deal of variability is attested for Indian English STRUT and NURSE, but central qualities such as [ə(:)], [ʌ(:)], [ɐ(:)] or [ɜ(:)] are most commonly reported for this variety. A comparison between the configurations of the gen1 vowels in figure 7.16 and the Hindi L1 speaker's vowels in figure 7.17 reveals that, if one takes FLEECE and START as reference points, the positions of FOOT, STRUT and NURSE are similar in both plots. In the absence of measurements for GOOSE, it is of course not possible to determine whether first-generation East African Indians have a FOOT-GOOSE distinction, but one may note that gen1 FOOT appears to be slightly more front vis-à-vis START than the FOOT vowel produced by Maxwell & Fletcher's (2009) informant. The STRUT-NURSE pair has a somewhat higher quality for the first generation than for the Hindi L1 subject but is located in the central region of the vowel space in both plots. A comparison with figure 7.18 likewise suggests that FOOT is a little more front for first-generation East African Indians than for Gujarati English speakers (whose FOOT and GOOSE vowels had very similar qualities; Wiltshire & Harnsberger 2006: 97-8), and that the STRUT and NURSE vowels, while being higher for the first generation, have central qualities for both groups. Lastly, a comparably back quality for *hood* (once again very similar to GOOSE) and central qualities for *hud* and *heard* are also found among first-generation Gujarati migrants in London (see the plot in Evans et al. 2007: 1743).

The evidence from qualitative and quantitative descriptions of the Indian English vowel system thus suggests that there are some potential differences and considerable parallels between gen1 FOOT, STRUT and NURSE and their Indian English counterparts. In particular, whereas FOOT may be slightly more front for the first generation than for Indian English speakers, the former's production of a qualitatively distinct FOOT-STRUT pair parallels Indian English patterns. Furthermore, while gen1 STRUT and NURSE may be located somewhat higher in the vowel space than the corresponding Indian English vowels, the lack of a clear qualitative contrast for this vowel pair found among first-generation East African Indians is well-attested in Indian English. Finally, the central quality of STRUT and NURSE displayed by the first generation is also widely reported for Indian English speakers, including those who appear to have a clearer distinction between the two vowels.



Like Indian English, East African English has a phonemic distinction between FOOT and STRUT but lacks a contrast between STRUT and NURSE (see the overview in section 4.2.4.2). At a broad level, the first generation's production of these vowels therefore also exhibits certain parallels to the second input variety. Closer inspection reveals, however, that gen1 FOOT, STRUT and NURSE differ from their East African English counterparts in important ways. East African English FOOT has, as noted earlier, fallen together with GOOSE under /u/. This is clearly illustrated in figure 7.19, which shows the Lobanov-normalised group means of nine male speakers of Black Kenyan English (from Hoffmann 2011: 162). Although caution is of course required when comparing formant frequencies across studies, it seems noteworthy that gen1 FOOT has both a higher F1 and a higher F2 value than the FOOT vowel produced by Hoffmann's (2011) informants (as opposed to e.g. FLEECE, which has similar values for both groups). This may indicate that FOOT is less peripheral for the first generation than for the Black Kenyan English speakers.

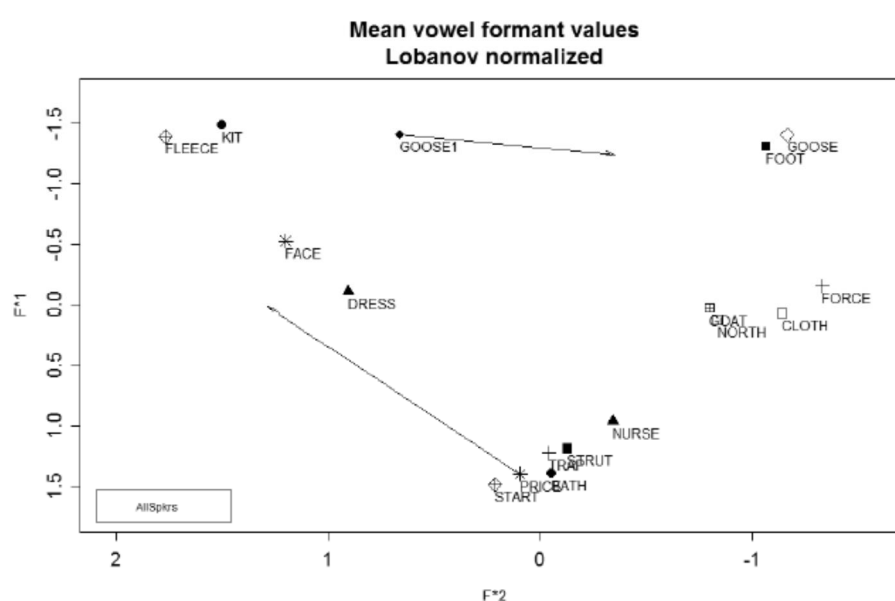


Figure 7.19 Mean F1 and F2 values of Black Kenyan English vowels (Lobanov-normalised; from Hoffmann 2011: 162).

The differences are even more striking for the STRUT-NURSE pair. Firstly, first-generation East African Indians show no evidence of the use of fronted realisations of STRUT and NURSE such as [a] and [ɛ], which are commonly considered to be among the most distinctive features of East African English. As mentioned earlier, Hoffmann's (2011)

subjects used centralised rather than front variants for these vowels, but a comparison of figures 7.16 and 7.19 indicates that gen1 STRUT and NURSE are considerably higher (with F1 differences on the order of 1 z-score) than their Black Kenyan English counterparts, which occupy the bottom of the vowel space. Furthermore, for first-generation participants STRUT and NURSE are clearly distinct from TRAP and START, whereas in East African English STRUT, NURSE, TRAP, START, BATH and *comma* have merged to /a/ or /ɛ/. Figure 7.19 shows that this merger is also found among Hoffmannø (2011) informants, with the exception that for this group NURSE is a little more back than the other vowels. All in all, the first generationø production of FOOT, STRUT and NURSE is thus not suggestive of strong affiliation with East African English.

The third input variety, East Midlands English, differs from the other two in that, traditionally at least, it has no FOOT-STRUT contrast but displays a qualitative distinction between the unsplit FOOT-STRUT vowel and NURSE. Hence, the finding that first-generation East African Indians show different qualities for FOOT and STRUT is relevant because it indicates that they have not adopted one of the most diagnostic features of broad East Midlands English (and, more generally, of broad varieties of northern English English). The picture is, however, complicated by the fact that East Midlands English exhibits variation between the traditional five-term system with /u/ for both FOOT and STRUT and the six-term system commonly found in more educated forms of the variety, in which STRUT is distinct from FOOT and has a fudged quality, often approaching [ə] or [ʌ]. Such a system is illustrated in figure 7.20, which represents the monophthongal vowels of a subset of Evans & Iversonø (2007) Ashby subjects.<sup>3</sup>

As discussed in section 4.2.4.3, Evans & Iverson (2007) found that, as a consequence of university education and contact with Standard Southern British English (SSBE), most of their informants changed their production of the vowels in *bud*, *cud* and *could*, adopting fronted and lowered variants that were phonetically closer to SSBE [ʌ]. Figure 7.20 reproduces formant measurements taken at time 4, i.e. after speakers had completed their second year at university (Evans & Iverson 2007: 3816). It shows the mean values of those participants (8 female and 3 male speakers) whose accents were rated as sounding more southern-like (Evans & Iverson 2007: 3816-8, Evans 2011/2012, p.c.) and who can therefore be considered representative of a more educated variety of East Midlands

---

<sup>3</sup> The raw formant data was kindly provided by Evans (2011/2012, p.c) and normalised in R with the `norm.lobanov` function from the `vowels` package (Kendall & Thomas 2010).

English referred to as hybrid Leicestershire-SSBE (hybrid Leics-SSBE) here. Note that, in the absence of acoustic work on the Leicester vowel system itself, formant data from Ashby is very suitable for comparison with this study, since these two sub-varieties of East Midlands English are reported to be very similar (Hughes et al. 2005: 92).

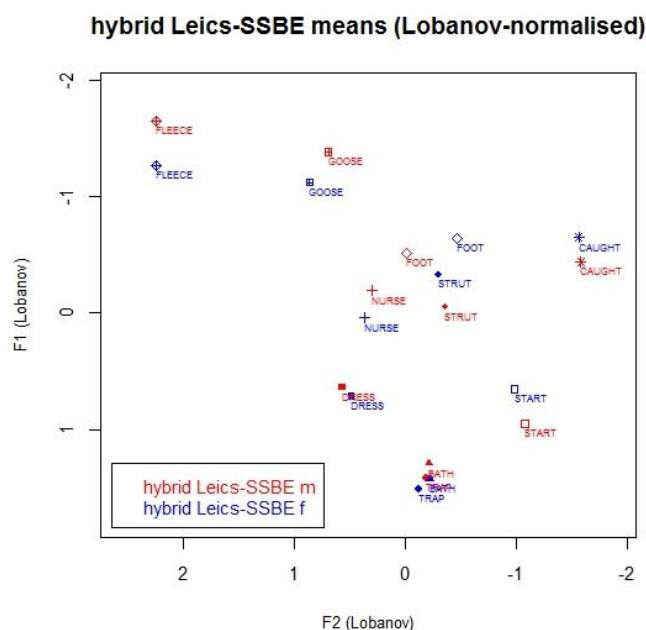


Figure 7.20 The monophthongal vowels of female and male speakers of hybrid Leicestershire-SSBE (mean values, Lobanov-normalised). Source: Evans & Iverson (2007); the raw formant values were kindly provided by Evans (p.c. 2011, 2012).

The plot in figure 7.20 indicates that both female and male speakers of hybrid Leics-SSBE have a qualitative contrast between FOOT and STRUT. FOOT is higher than STRUT, which has a centralised, fudged quality, paralleling those reported for educated forms of northern English English in other sources. While this pair is thus qualitatively distinct for both first-generation East African Indians and Evans & Iverson's (2007) Ashby subjects, a comparison with figure 7.16 shows that the height difference between the two vowels is much larger for the former. This is because gen1 STRUT is lower than hybrid Leics-SSBE STRUT, whereas gen1 FOOT is higher (and, particularly for male speakers, more back) than hybrid Leics-SSBE FOOT. As noted earlier, Evans & Iverson (2007) reported that over time their Ashby informants centralised not only *bud* and *cud* but also *could*. The authors suggest that this may have resulted from an inability to split the FOOT-STRUT category or,

alternatively, from a hypercorrect use of centralised variants, derived from an attempt at sounding more SSBE-like (Evans & Iverson 2007: 3819). It seems that, even though gen1 FOOT may have a less peripheral quality than Indian English and East African English FOOT, it has not been centralised to the same degree as hybrid Leics-SSBE FOOT.

Figure 7.20 also confirms the second major difference between East Midlands English and the other two input varieties, namely, that the former has separate phonemes for STRUT and NURSE, regardless of whether STRUT is distinct from FOOT or not. The NURSE vowel produced by speakers of hybrid Leics-SSBE is, in fact, much more front (and, for female speakers, lower) than their STRUT vowel. The plot thus points to further differences between first-generation participants and Evans & Iverson's (2007) Ashby subjects: compared to its hybrid Leics-SSBE counterpart, the quality of gen1 NURSE is more back (cf. figure 7.16), and the lack of a clear qualitative contrast between STRUT and NURSE found among first-generation East African Indians considerably diverges from East Midlands English patterns.

In the discussion of postvocalic /r/ (see section 6.1.2.3) I noted that without real-time data it is difficult to determine whether and to what extent first-generation East African Indians may have accommodated to the local non-rhotic variety of British English since their arrival in the UK. Conclusions are even harder to draw with regard to the vocalic features analysed in this study, since a FOOT-STRUT contrast and central(ised) variants for STRUT have been reported for both Indian English and educated East Midlands English. Contact with the latter variety is likely for this group: as described earlier, first-generation participants tended to come from middle-class backgrounds; it was common for them to have attended adult education in or near Leicester and many frequently interacted with members of the white community in relatively formal settings (e.g. at work). It is therefore possible that some accommodation to (educated) East Midlands English may have taken place for the first generation. Note, for example, that in terms of vowel height, gen1 STRUT appears to be located somewhere in-between the STRUT vowels produced by (some) Indian English speakers (figures 7.17 and 7.18) and hybrid Leics-SSBE speakers (figure 7.20). Even though, as pointed out above, such differences need to be interpreted cautiously, one might speculate that this intermediate quality may have resulted from first-generation East African Indians adopting raised variants of STRUT in order to approximate the phonetic quality of this vowel in educated East Midlands English. By the same token, the fact that gen1 FOOT seems to be somewhat less peripheral than the Indian English FOOT vowels in

figures 7.17 and 7.18 could be indicative of some adaptation to educated East Midlands English norms (although, especially in this case, the difference may also be due to the use of conversational vs. word list data). In any case, however, it is important to note that if first-generation East African Indians went through a process of accommodation to the local variety of (educated) British English, this process can only have been partial, since they have not acquired a clear qualitative contrast between STRUT and NURSE.

### 7.2.1.2 Second generation

The analysis in section 7.1.1 demonstrated that, like their parents' generation, second-generation East African Indians (whose mean F1 and F2 values are reproduced in figure 7.21) have a qualitative contrast between FOOT and STRUT, with the former being significantly higher than the latter. This parallel is important because it indicates that, as a group, they have not adopted the unsplit FOOT-STRUT vowel found in broad varieties of East Midlands English, either.

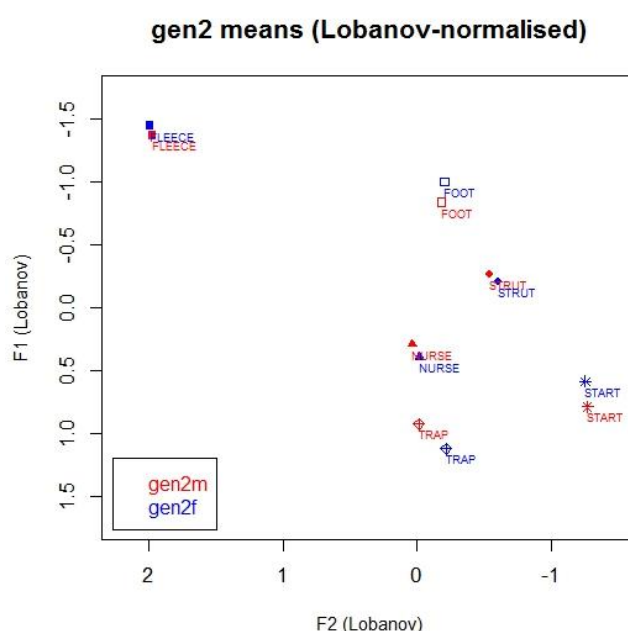


Figure 7.21 Mean F1 and F2 values of FOOT, STRUT and NURSE for second-generation female and male speakers (Lobanov-normalised). FLEECE, TRAP and START are shown as reference points.

At the same time, the second generation's production of FOOT and STRUT differs noticeably from that of the first generation. As discussed earlier, for this group FOOT is more front than STRUT (rather than more back as for the first generation). The difference does not reach statistical significance though and is likely to result at least partly from the predominance of *good* among FOOT tokens. Both female and male second-generation speakers also diverge from first-generation participants in that gen2 FOOT has a more fronted quality than gen1 FOOT. In contrast to the STRUT-FOOT estimate just mentioned, this difference was evaluated as highly significant in the regression analysis, which indicates that the effect of the predictor generation persists even after the influence of very frequent lexical items such as *good* has been taken into account. In fact, if one computes the mean F2 value for each generation as the average of all word means rather than the average of all tokens (giving thus equal weight to each lexical item), the mean values themselves change but the difference between the two groups remains similar: averaged over tokens, the mean F2 values for gen1 and gen2 FOOT are -0.598 and -0.192 *z*-scores, respectively; averaged over the means of individual lexical items, they are -0.913 and -0.555 *z*-scores.<sup>4</sup> This suggests that, overall, FOOT is less peripheral for the second generation than the first, and a comparison with figure 7.20 indeed reveals that the phonetic realisation of gen2 FOOT is closer to the quality exhibited for this vowel by Evans & Iverson's (2007) Ashby subjects, although for the latter group FOOT is slightly lower. This similarity points to affiliation with East Midlands English, rather than with the speech patterns of the first generation, and is in line with the finding of Evans et al. (2007: 1743-4) that second-generation Gujarati migrants in London produced *hood* with a more fronted quality than first-generation subjects did (even though it was not as fronted as in Standard Southern British English). Moreover, a fronted quality for FOOT is also attested in many varieties of present-day British English (cf. section 4.2.1).

Gen2 STRUT diverges from its gen1 counterpart by being located higher in the vowel space. Even if the difference does not reach statistical significance for the female groups, this tendency is remarkable because it provides an indication that the phonetic quality of this vowel approximates East Midlands English more closely for the second generation than the first. This is once again confirmed by an examination of figures 7.20 and 7.21, which shows that the STRUT vowel produced by second-generation speakers has roughly the same

---

<sup>4</sup> In the computation of the mean value of each lexical item, I have collapsed base and derived forms (e.g. *look-looking*, *book-books*).

height as hybrid Leics-SSBE STRUT (though being a little more back). NURSE distinguishes the two generations even more clearly: its phonetic realisation is significantly more front (and for female speakers lower) for gen2 than gen1. Figures 7.20 and 7.21 indicate that this vowel is somewhat lower and more back for second-generation speakers than for Evans & Iversonø (2007) Ashby subjects. It is, however, located roughly in the same region of the vowel space and, most importantly, its quality is very different from that of STRUT for both groups ó unlike the quality of gen1 NURSE. The qualitative contrast between STRUT and NURSE displayed by second-generation participants represents rather strong evidence against transmission from the first generation: since no clear distinction is present in the speech of their parentsø generation, they are most likely to have acquired it via the local British English variety.

All in all, the results for FOOT, STRUT and NURSE thus suggest that, whereas the production of these vowels by first-generation East African Indians most closely resembles their occurrence in Indian English (though partial accommodation to educated East Midlands English may also have taken place for this group), second-generation East African Indians have not adopted these patterns. The use of a fronted FOOT vowel and of distinct qualities for STRUT and NURSE points to affiliation with East Midlands English, and the presence of a FOOT-STRUT contrast and of a fudged, centralised quality for STRUT to the adoption of the northern intermediate short vowel system and, in other words, to affiliation with a more educated rather than a broad sub-variety of East Midlands English. Considering that most second-generation speakers were educated at least up to Bachelor level and that, apart from the two students doing their A-levels, all of them had middle-class occupations, contact with and accommodation to more educated forms of East Midlands English are indeed very likely for this group. The results for the three vowels therefore confirm the overall pattern reported by Evans et al. (2007), who found that first- and second-generation Gujarati migrants in London tended to produce vowels that resembled those of their L1 and SSBE, respectively (note, though, that the phonetic realisation of the vowels in *hud* and *heard* did not differ across generations; Evans et al. 2007: 1743). The parallel linguistic behaviour of East African Indians in Leicester and Gujarati migrants in London is further explored in section 8.2.2.

## 7.2.2 Vowel duration

### 7.2.2.1 Gender-related variation

An interesting result that emerged from the analysis in section 7.1.2 is the remarkably consistent gender pattern exhibited by East Africans Indians for vowel duration: across generations and vowels, female speakers use significantly longer durations than male speakers. It is not clear whether this tendency is also found in the three input varieties, since acoustic work on the Indian English, East African English and East Midlands English vowel systems is often based on data from one gender only, e.g. female subjects in Wiltshire (2005) and Wiltshire & Harnsberger (2006), or male subjects in Maxwell & Fletcher (2009) and Thomas (2011). Furthermore, those studies that did use data from both genders (e.g. Evans & Iverson 2007 and McCarthy et al. 2011) did not aim at evaluating the effect of this variable on vowel duration and, therefore, did not examine the results for female and male speakers separately.

Beyond the three input varieties, however, similar gender differences were reported in a number of previous investigations of vowel duration, not only for other varieties of English but also for other languages. In an acoustic analysis of American English vowels, Hillenbrand et al. (1995) showed that female speakers produced longer durations than male speakers for each of the 12 vowels included in the study. More recently, Jacewicz et al. (2007) compared the durations of the *hid*, *head*, *had*, *hayed* and *hide* vowels across three dialect areas of the US (Inland North, Midlands and South), again finding that they were longer for female subjects than for male subjects (although in this study the effect of gender was weaker and more variable than that of dialect). The same pattern is also reported in Simpson (2003) acoustic-articulatory investigation of American English *light* tokens, Cox (2006) study of 18 Standard Australian English monophthongs and diphthongs, and Adank et al. (2007) work on the Northern and Southern Standard Dutch vowel systems. Moreover, findings from more fine-grained analyses suggest that this gender difference interacts with other factors in complex ways. For instance, Ericsson & Ericsson (2001) study of Central Standard Swedish demonstrated that female speakers produced longer vowel durations than male speakers in stressed monosyllabic items but that, if the same items occurred in unstressed positions, durations were either similar across genders or longer for male subjects. This led Ericsson & Ericsson (2001: 36) to conclude that in



their study women made use of greater vowel durational contrasts than men. A follow-up investigation based on data from American English and Central Standard Swedish speakers (Simpson & Ericsson 2003) confirmed this tendency: whereas female subjects tended to produce longer vowels in stressed syllables, male speakers often used longer durations for unstressed vowels and/or consonantal segments, so that the average durations of the entire utterances showed no gender difference.

There appears to be no general agreement yet as to why women would produce longer (stressed) vowels than men. Hillenbrand et al. (1995: 3102) state that they cannot account for this phenomenon and Adank et al. (2007: 1139) likewise observe that the cause of this gender difference is not clear. Simpson (2003: 261) notes that

[o]ne possible explanation for greater vowel durations as well as for greater durational differences between categories is sociophonetic. Producing longer durations and greater durational differences can be seen as one of the correlates of speaking more clearly, an attribute which has been assigned to female speech (Elyan 1978). However, similarities in the size and nature of the differences found in the languages cited indicate that possible physical/biological explanations should be explored.

Using X-ray microbeam data in order to investigate the correlation between articulatory movements and diphthong duration in the set of *light* tokens mentioned above, Simpson (2003) found that the synchronisation of tongue tip and body movements differed across women and men. He points out, however, that this result does not really settle the issue, since the following question remains open: 'is the different synchronization of tongue tip and body movements one of the strategies used to bring about different acoustic duration, or is it just a byproduct of the complex interaction of the different articulators?' (Simpson 2003: 266).

Cox (2006) argued that her findings on Standard Australian English were indicative of sociophonetic phenomena. In addition to the overall differences in vowel length, her study revealed complex patterns of gender-related variation in the duration of individual vowel components: in monophthongs, female speakers tended to exhibit longer targets and shorter consonant-vowel transitions than male speakers; in diphthongs, they produced longer transitions from the first to the second target. According to Cox (2006: 170), this points to a use of clearer speech strategies on the part of female speakers. Moreover, male subjects used longer first targets in the diphthongs *hade* /æɪ/, *hide* /aɪ/, *howd* /əʊ/, *heed* /i:/ and *whoəd* /ʊ/ (which are variably diphthongised). As this is characteristic of broader

variants of Standard Australian English, the author concludes that “[t]he female subjects in this study may choose their marker vowels from the more prestigious end of the General range and the males from the less prestigious end” (Cox 2006: 170).

The fact that in the present study both first- and second-generation female speakers invariably produced longer durations than their male counterparts is certainly intriguing, especially if one considers that in many other respects there are considerable differences in the production of FOOT, STRUT and NURSE between the generations. It is not clear, however, whether this could be indicative of a physical or biological origin of the pattern, since the gender differences are not equally large across generations. In particular, it is remarkable that, while the gender difference in the mean duration of FOOT is similar for first- and second-generation informants (14.9% for gen1 participants and 13.4% for gen2 participants; cf. appendix IV), the ones for STRUT and NURSE are larger for the second generation than the first: among gen1 subjects, the mean durations of STRUT and NURSE produced by female speakers are 7.3% and 6.8% longer than the corresponding male durations, respectively; among gen2 subjects, they are, on average, 16.9% and 18.5% longer than their male counterparts.

This cross-generational difference in proportions did not result in being statistically significant in the regression analysis, as evidenced by the fact that gender was not involved in any significant interactions with the predictors vowel and generation. While this cautions against jumping to conclusions, the difference is interesting because it may indicate that physical or biological constraints alone cannot explain the patterns of gender-related variation in vowel duration found among the participants of the present study. Further research is required to shed more light on the issue, but it seems likely that in this speaker sample, factors such as physical/biological differences and a female tendency towards clearer articulation may interact with patterns of rhythmic variation (see section 7.2.2.2 below). Simpson & Ericsdotter (2003: 116) argued that “sex-specific durational differences and similarities are complex and multi-faceted ... [and] that no single factor can be used to derive male durations from their female counterparts.” The findings discussed here appear to support their claim.

### 7.2.2.2 First generation

The analysis in section 7.1.2 also showed that even if first-generation female speakers tend to produce longer durations than first-generation male speakers, both genders exhibit the same pattern of durational variation across vowels: NURSE is longest, followed by FOOT and, lastly, by STRUT. A central question with regard to this constraint hierarchy is whether it allows for further inferences about the relative influence of Indian English, East African English and East Midlands English on the migrants' production of the three vowels. A comparison with vowel length patterns in the three input varieties raises, however, an important issue, namely: how short does a vowel have to be in order to be classified as phonemically short, and how long does a vowel have to be in order to fall into the phonemically long category? In his discussion of contrastive length, Thomas (2011: 143) observes that ordinarily, long vowels show durations only about 50 per cent longer than those of short vowels, and often the difference is even less than that. In the present study, first-generation participants exhibited the following proportional differences between the mean durations of FOOT, STRUT and NURSE: 26.2% (female speakers) and 19.6% (male speakers) for the FOOT-STRUT pair, 36.9% (female speakers) and 37.2% (male speakers) for the STRUT-NURSE pair, and 14.4% (female speakers) and 21.9% (male speakers) for the FOOT-NURSE pair (cf. table 7.8 and the mean duration values reported in appendix IV).<sup>5</sup> In what follows, I will focus on the differences between FOOT and STRUT and those between STRUT and NURSE, since, as noted earlier, these vowel pairs have a greater diagnostic value for the three input varieties than the FOOT-NURSE pair.

Table 7.8 Proportional differences between the mean durations of FOOT, STRUT and NURSE by generation and gender.

generation	gender	duration difference %		
		FOOT-STRUT	STRUT-NURSE	FOOT-NURSE
first	female	26.2	36.9	14.4
	male	19.6	37.2	21.9
second	female	17.1	47.6	36.8
	male	20.4	46.6	32.9

<sup>5</sup> These relative values can be more easily compared across studies than absolute duration values, which tend to be considerably longer in word lists than spontaneous speech.

The contrast between STRUT and NURSE resulted in being highly significant in the regression analysis and seems indeed prominent enough to regard these two vowels as short and long, respectively. The status of FOOT is, however, less clear, since its duration is intermediate between those of the other two vowels and the FOOT-STRUT difference remained statistically very significant even after a Bonferroni adjustment.<sup>6</sup> A few methodological considerations are therefore required. Because inter-speaker and inter-word variation was controlled for by the inclusion of random parameters, it seems unlikely that the length difference between FOOT and STRUT is due to a biasing effect of highly common lexical items such as *good*. It is possible, though, that the durations of the two vowels have been affected by other sources of influence not detected by the model. For example, as pointed out earlier, vowels followed by voiced consonants tend to be up to 50% longer than vowels followed by voiceless consonants. However, since in the dataset used for this study 91.9% of the STRUT tokens but only 53% of the FOOT tokens occurred before a voiced consonant, voicing is unlikely to account for the longer duration of FOOT. What could play a greater role, on the other hand, is word length: FOOT tokens very often appeared in monosyllabic words (e.g. *full, good, look, put, took*), whereas STRUT tokens were not only common in monosyllabic lexical items (e.g. *love, fun*) but also in bi- and multisyllabic words (e.g. *cousins, studied, becoming, cultural*). Accordingly, the mean word durations of FOOT and STRUT for the first generation are 262 and 378 milliseconds, respectively. This difference is potentially relevant in that, as noted earlier, vowels in shorter words generally have longer durations. In this regard, it is noteworthy that FOOT is significantly longer than STRUT not only for the first generation but also for the second (even though for gen2 female speakers at least, the difference is less large; cf. section 7.2.2.3 below).

While linguistic constraints of this kind are likely to affect duration values to some extent at least, a comparison with previous work on the three input varieties shows that the patterns of variation in vowel length found among first-generation East African Indians parallel those attested for the FOOT-STRUT and STRUT-NURSE pairs in Indian English. As discussed in section 4.2.4.1, variable duration contrasts between FOOT and GOOSE and between STRUT and NURSE are attested in both qualitative and quantitative descriptions of this variety. An inspection of the duration values reported in acoustic studies reveals that, although especially the FOOT-STRUT pair is quite variable across different groups of Indian

---

<sup>6</sup> Note that, though not discussed here, the durations of FOOT and NURSE were also significantly different (Bonferroni-adjusted  $p < 0.001$ ).

English speakers and even across individual informants, the proportional differences between FOOT and STRUT and between STRUT and NURSE are generally similar to those produced by the first-generation participants of this study. Among Maxwell & Fletcher (2009: 65) Hindi and Punjabi L1 subjects, for instance, the differences between FOOT and STRUT ranged from 13% to 22%, with three speakers producing longer durations for FOOT and three speakers showing longer durations for STRUT (and one speaker producing no STRUT tokens at all). Furthermore, FOOT was found to be longer than STRUT for Gujarati English speakers (8%; Wiltshire & Harnsberger 2006: 98) as well as Ao and Mizo L1 subjects (17% and 16%; Wiltshire 2005: 291), whereas it was reported to be shorter than STRUT for Tamil English speakers (24%; Wiltshire & Harnsberger 2006: 98) and Angami L1 informants (22%; Wiltshire 2005: 291). In contrast, NURSE was shown to be invariably longer than STRUT in all studies. With the exception of Angami L1 speakers, whose NURSE vowel was only 20% longer than STRUT (Wiltshire 2005: 291), the differences between the two vowels ranged from 32% to 67%. Both Indian English speakers and first-generation East African Indians thus appear to exhibit a modest duration difference between FOOT and STRUT and a noticeably greater contrast between STRUT and NURSE. This similarity is all the more remarkable because the Indian English duration values just mentioned stem from word list data and are hence not subject to the influence of constraints such as word length. Like some Indian English speakers (as, for instance, Maxwell & Fletcher subjects), first-generation East African Indians hence seem to compensate the lack of a clear qualitative contrast between STRUT and NURSE with a quantitative distinction.

The difference in duration displayed by the STRUT-NURSE pair sets the first generation's production of these two vowels even more clearly apart from the patterns reported for the second input variety, East African English. As noted in section 4.2.4.2, this variety is generally claimed to have merged STRUT and NURSE (as well as other vowels) not only qualitatively but also quantitatively, and Hoffmann (2011) acoustic study of Black Kenyan English indeed found that the durations of STRUT and NURSE did not differ significantly from that of BATH. In contrast, clear quantitative distinctions are characteristic of the third input variety, East Midlands English, in which FOOT and STRUT are phonemically short and NURSE is phonemically long (see section 4.2.4.3). This is confirmed by the mean duration values reported by Evans & Iverson (2007: 3819): from time 1 (i.e. before beginning university) to time 4 (i.e. after two years of university education), their Ashby subjects always produced a somewhat longer duration for *bud* than for *could* (with

the difference being around 8-10% in the great majority of cases), which was in turn minimally but invariably longer than *cud* (2-5%). At all times, the lengths of *bud* and *cud* differed much more from that of *bird*, which was between 49% and 65% longer than the other two vowels. Furthermore, Evans & Iverson (2007: 3818-9) showed that the durations of *bud*, *cud*, *could* and *bird* did not change over time, which suggests that these length differences are characteristic not only of the broader pronunciations their informants used initially but also of the more educated variants they adopted as a consequence of contact with Standard Southern British English.

On the one hand, the patterns of durational variation found for FOOT, STRUT and NURSE among first-generation East African Indians thus show some similarity to at least one variety of East Midlands English as well. On the other hand, the comparison with Evans & Iverson's (2007) duration values reveals a certain tendency to divergence: while the durational difference between FOOT and STRUT is larger for the first generation than for Evans & Iverson's (2007) Ashby informants, the distinction between STRUT and NURSE is greater for the latter group. With the caveat that for first-generation speakers the FOOT-STRUT difference may have been reinforced by differences in word length, the fact that this group seems to have a less clear contrast between two phonemically short vowels and a phonemically long vowel is suggestive in that it could be related to prosodic differences. Impressionistically, first-generation participants displayed a tendency towards a more syllable-timed rhythm, a feature reported for both Indian English (CIEFL 1972; Kachru 1994; Trudgill & Hannah 1994; McArthur 2003; Nihalani et al. 2004; Gargesh 2004) and East African English (Schmied 2004). Because in an (idealised) syllable-timed language variety the length of time from one syllable to the next is relatively uniform, regardless of stress (Thomas 2001: 194), a greater degree of syllable-timing may have contributed to smaller durational distinctions across phonemically long and short vowel categories for this group. At any rate, although influence (possibly in the form of an enhancing effect) from the other two input varieties cannot be excluded here, the length differences between FOOT, STRUT and NURSE produced by first-generation East African Indians show considerable parallels to those reported in acoustic studies of Indian English.

### 7.2.2.3 Second generation

As demonstrated in section 7.1.2, second-generation East African Indians follow first-generation participants in displaying the same general pattern of durational variation across vowels, with NURSE being longer than FOOT and FOOT being longer than STRUT. The analysis also showed, however, that they diverge from their parents' generation by producing longer durations for NURSE and shorter durations for FOOT and STRUT. Even though these cross-generational changes did not reach statistical significance, their combined effect is that, compared to the first generation, gen2 speakers exhibit a smaller difference between FOOT and STRUT but a greater distinction between NURSE, on the one hand, and FOOT and STRUT, on the other. This is evidenced by the fact that the FOOT-STRUT difference was almost non-significant, whereas the one between STRUT and NURSE was highly significant.<sup>7</sup> For the second generation, the proportional differences between the mean durations of the three vowels are the following: 17.1% (female speakers) and 20.4% (male speakers) for the FOOT-STRUT pair, 47.6% (female speakers) and 46.6% (male speakers) for the STRUT-NURSE pair, and 36.8% (female speakers) and 32.9% (male speakers) for the FOOT-NURSE pair (see table 7.8 and the mean duration values listed in appendix IV).

A comparison with the duration values discussed in the previous section confirms that the proportional differences between STRUT and NURSE and between FOOT and NURSE are consistently larger for the second generation than the first, whereas, for female speakers at least, the one between FOOT and STRUT is larger for the first generation than the second. The only exception to this trend is the FOOT-STRUT difference exhibited by male speakers, which remains unchanged across generations. Rather than affiliating with the durational patterns characteristic of their parents' generation, second-generation East African Indians therefore appear to show a clearer contrast between phonemically short and long vowels for FOOT, STRUT and NURSE. This parallels the tendency found among Evans & Iverson's (2007) Ashby subjects. It is noteworthy, in this regard, that although second-generation participants display a somewhat larger duration difference between FOOT and STRUT than Ashby speakers (which may be related to the effect of factors like word length in the present dataset; cf. above), the difference between STRUT and NURSE is relatively similar for

---

<sup>7</sup> Though not discussed here, the duration difference between FOOT and NURSE was also highly significant (Bonferroni-adjusted  $p < 0.001$ ).

the two groups. On the whole, the results for vowel duration thus suggest that while the first generation has (to some extent at least) maintained Indian English durational patterns for FOOT, STRUT and NURSE, the second generation shows greater affiliation with the tendencies found in East Midlands English.

### 7.3 Summary

The analysis of vowel quality and duration presented in this chapter demonstrated that, like the use of postvocalic /r/, the production of FOOT, STRUT and NURSE clearly differentiates first- and second-generation East African Indians. In terms of vowel quality, both groups have a contrast between FOOT and STRUT, which is located near the centre of the vowel space. They differ, however, in that FOOT is more front and that STRUT is higher for the second generation than the first (even though for female speakers the difference between gen1 and gen2 STRUT was not statistically significant). The STRUT-NURSE pair distinguishes the two generations even more sharply. For the second generation, NURSE is much more front and lower than STRUT, and there is little doubt that the two vowels are separate phonemes. In contrast, for the first generation NURSE is located in close proximity to STRUT and the qualitative difference between the two vowels is very small (but note that it is somewhat greater for female speakers than for male speakers). I argued that the first generation's production of FOOT, STRUT and NURSE can best be accounted for in terms of maintenance of Indian English patterns (and possibly partial accommodation to educated East Midlands English), whereas the second generation's production of these vowels is suggestive of the adoption of educated East Midlands English features.

The analysis of vowel duration showed that the two generations display the same overall pattern of variation: for both groups, NURSE is longer than FOOT and FOOT is longer than STRUT. For the first generation, the difference between the durations of STRUT and NURSE was highly significant, which suggests that first-generation East African Indians distinguish the two vowels by means of a length contrast rather than a qualitative distinction. Second-generation speakers differ from their parents' generation in that they produce longer durations for NURSE and shorter durations for FOOT and STRUT. The differences were not statistically significant, but one consequence of this tendency is that the second generation appears to have a clearer length contrast between NURSE, on the one hand, and FOOT and STRUT, on the other hand, i.e. between a phonemically long and two



phonemically short vowels. I suggested that this difference may be related to a more syllable-timed rhythm on the part of first-generation participants. While it cannot be excluded that influence from East African English or East Midlands English contributed to the durational patterns displayed by first-generation speakers, I argued that these patterns show greatest similarity to those attested in Indian English. In contrast, those displayed by second-generation informants most closely resemble East Midlands English.

Finally, an interesting finding that emerged from the analysis of vowel length is that female speakers invariably produced longer durations than male speakers. While it is not known whether a similar tendency is found in the three input varieties, this gender pattern is attested in a number of previous investigations of vowel duration in English and other languages. In the present study, the gender difference for FOOT was similar across generations, while those for STRUT and NURSE tended to be larger among second-generation speakers. It is possible that among East African Indian speakers, this pattern results from an interaction of differences in speech rhythm and other factors (sociophonetic, physical, biological).

## **8. Dialect variation and change among East African Indians in Leicester: the broader picture**

### **8.0 Introduction**

In this chapter, I expand the discussion presented in chapters 6 and 7. I consider the patterns of linguistic variation and change identified among East African Indians in Leicester in the light of previous findings on English in the Indian diaspora. In section 8.1, I summarise the results for postvocalic /r/ and the FOOT, STRUT and NURSE vowels. Based on these findings, I answer the two research questions outlined in section 1.4. In section 8.2, I compare the tendencies displayed by the participants of the present study to those reported for other Indian diasporic communities, both in Britain and elsewhere. Whereas the analysis in chapters 6 and 7 focused on internal (linguistic) evidence, in this section I examine external (extra-linguistic) evidence, looking at socio-historical (and other) factors to find possible explanations of the parallels and differences found.

### **8.1 Summary of the study's findings**

#### **8.1.1 First generation**

The first research question stated in section 1.4 was whether the patterns of linguistic variation displayed by first-generation East African Indians in Leicester show any parallels to Indian English, East African English, or East Midlands English. Chapter 6 looked into first-generation speakers' use of postvocalic /r/. As a group, they were found to be variably rhotic, with a certain tendency towards non-rhoticity. They also exhibited a very frequent use of rhotic variants of coda /r/ in prevocalic position and an overwhelming preference for tapped and trilled (rather than approximant) realisations of rhotic tokens. I argued that these patterns point to affiliation with Indian English, since variable rhoticity is commonly attested in this variety, whereas East African English and East Midlands English are both non-rhotic. Moreover, similar rhoticity levels and a strong tendency towards the use of taps and trills were reported for Indian English speakers from comparable socioeconomic and/or regional-linguistic backgrounds (most notably, the Gujarati English speakers from Wiltshire & Harnsberger's 2006 study; but cf. Chand 2010). While the first generation's

use of postvocalic /r/ most closely resembles Indian English patterns, it is possible that their tendency towards non-rhoticity has been reinforced by influence from the other two input varieties, or that their use of taps and trills has been favoured by the occurrence of these variants in East African English.

First-generation participants also displayed a high degree of inter-speaker variability in rhoticity levels. A mixed-effects regression analysis showed that, like in many other English dialects, variation in the occurrence of postvocalic /r/ within the first generation is significantly constrained by following phonological environment, with prepausal contexts favouring rhoticity over preconsonantal ones. In contrast with Indian English, where women have been found to be less rhotic than men, gender did not result in being significant in the present study. It is possible, however, that this finding is simply due to limitations of dataset. Finally, age also emerged as an important predictor of rhoticity, with older speakers pronouncing postvocalic /r/ more frequently than younger speakers. This pattern has also been reported for Indian English (with the exception of Chandø 2010 youngest age group). I argued that the correlation between age and rhoticity among first-generation East African Indians is particularly intriguing because it supports my argument that this group has maintained Indian English patterns. In this community, older, retired speakers are in fact likely to have less contact with non-rhotic East Midlands English than younger, working-age speakers.

The analysis of FOOT, STRUT and NURSE in chapter 7 looked into both vowel quality and vowel duration. As regards the former, the first generation displayed distinct qualities for FOOT and STRUT but lacked a clear contrast between STRUT and NURSE. The NURSE vowel produced by female speakers was somewhat higher than their STRUT vowel, but for both genders they were located very close to each other in the central region of the vowel space. I claimed that the first generation has maintained Indian English patterns for the following reasons: Indian English has different qualities for FOOT and STRUT but is widely reported to lack a qualitative contrast between STRUT and NURSE, which tend to have central qualities in this variety. Some Indian English speakers, including speakers from a Gujarati first-language background (Wiltshire & Harnsberger 2006; Evans et al. 2007), appear to have a greater qualitative distinction between STRUT and NURSE than the first-generation participants of this study (which could partly be related to methodological differences) but they do resemble gen1 speakers in displaying central qualities for them.

The available evidence on East African English suggests that influence from this variety is unlikely, even if it parallels Indian English in having a FOOT-STRUT distinction but no STRUT-NURSE contrast. A comparison with Hoffmannø (2011) Black Kenyan subjects suggests that gen1 FOOT may be less peripheral than the FOOT vowel of these speakers. Furthermore, first-generation East African Indians do not appear to make use of the fronted variants of STRUT and NURSE ([a] and [ɛ]) that are typical of East African English. Hoffmannø (2011) informants were shown to use centralised qualities for STRUT and NURSE but these variants differ noticeably from the gen1 vowels as well, as they are much lower. Finally, East African English has merged STRUT and NURSE with several other vowels (TRAP, START, BATH and *comma*), whereas first-generation East African Indians have a clear contrast between the STRUT-NURSE pair, TRAP and START.

The analysis also showed that gen1 speakers have not adopted the unsplit FOOT-STRUT vowel that is characteristic of broad East Midlands English. A comparison with subjects representing a more educated form of the variety, i.e. the group of hybrid Leics-SSBE (hybrid Leicestershire-Standard Southern British English) speakers from Evans & Iversonø (2007) Ashby study, revealed that these speakers differ from first-generation participants in having a more centralised FOOT vowel, a higher STRUT vowel and, most importantly, a clear qualitative contrast between STRUT and NURSE. While the vowel configuration of first-generation East African Indians thus diverges from that of hybrid Leics-SSBE, I noted that partial accommodation to educated forms of East Midlands English cannot be excluded here. A finding that points in this direction is that the qualities of gen1 STRUT and FOOT appear to be intermediate between those of the corresponding Indian English and hybrid Leics-SSBE vowels. It is tempting to speculate that these intermediate qualities resulted from the first generationø adoption of raised variants (for STRUT) and fronted variants (for FOOT) that approximate the hybrid Leics-SSBE vowels more closely.

In terms of length, the vowels produced by first-generation female speakers were invariably longer than those produced by their male counterparts (a pattern attested in a number of varieties of English and other languages; cf. section 7.2.2.1). For both genders, the vowels were ranked in the same order though: NURSE was longest, followed by FOOT and, lastly, by STRUT. The proportional differences in duration for the FOOT-STRUT and STRUT-NURSE pairs were found to be fairly similar to those reported in acoustic studies of Indian English, with both Indian English and gen1 speakers displaying a modest durational

contrast between FOOT and STRUT and a much larger difference between STRUT and NURSE. I therefore argued that first-generation East African Indians parallel (some) Indian English speakers in distinguishing STRUT and NURSE by means of vowel length rather than vowel quality. First-generation participants clearly diverge from East African English, which has lost distinctions in vowel duration. They also differ from the Ashby subjects of Evans & Iverson's (2007) study in that the latter distinguish NURSE (a phonemically long vowel) more clearly from FOOT and STRUT (two phonemically short vowels). It could be that this difference results from a more syllable-timed rhythm among first-generation East African Indians, a feature typical of Indian English and East African English. While a strengthening effect from East African English (leading to smaller length distinctions) or from East Midlands English (leading to greater length distinctions) cannot be ruled out, the durational patterns displayed by gen1 speakers appear to show greatest similarity to those reported for Indian English.

To answer the first research question then, the findings indicate that overall, first-generation East African Indians in Leicester have retained Indian English patterns in their production of postvocalic /r/ and the FOOT, STRUT and NURSE vowels. No evidence for features characteristic of East African English (such as the use of [a] or [ɛ] for STRUT and NURSE, or the merger of STRUT and NURSE with TRAP and START) emerged from this study. Although influence from this variety cannot be excluded on linguistic grounds alone, it seems relatively unlikely on socio-historical grounds (see section 8.2 below). In contrast, it is plausible to assume that some accommodation to East Midlands English on the part of first-generation speakers has taken place. Despite having lived in Leicester for 35-40 years, however, their production of postvocalic /r/ and the FOOT, STRUT and NURSE vowels still differs considerably from the patterns attested in this dialect.

### **8.1.2 Second generation**

The second research question outlined in section 1.4 was whether and how the patterns of linguistic variation found among East African Indians in Leicester change from the first generation to the second. Both the analyses of postvocalic /r/ and the FOOT, STRUT and NURSE vowels demonstrated that the use of these variables strikingly differs across the two groups. As shown in chapter 6, second-generation East African Indians diverged from their parents' generation by being almost categorically non-rhotic. This was found to be the case

for all speakers in this group and is suggestive of a qualitative rather than quantitative difference. Moreover, second-generation participants showed (like first-generation informants) a strong tendency towards pronouncing postvocalic /r/ in linking /r/ contexts and also made use of rhotic variants in intrusive /r/ environments. Unlike the first generation, they displayed an overwhelming preference for approximant realisations of rhotic tokens. These results indicate that the patterns of postvocalic /r/ found among first-generation East African Indians have not been transmitted to the second generation. Instead, I claimed that this group has accommodated to East Midlands English, since non-rhoticity and approximant realisations of /r/ (in prevocalic position) are characteristic of this variety, and both linking /r/ and intrusive /r/ are widely found in non-rhotic native English dialects.

Chapter 7 revealed that, like first-generation participants, second-generation East African Indians display a qualitative contrast between FOOT and STRUT, which shows that they have not acquired the five-term short vowel system typical of broad East Midlands English. Nevertheless, they diverge from their parents' generation in several ways. Compared to gen1 speakers, they produce a fronted FOOT vowel, a raised STRUT vowel and, crucially, a clear qualitative distinction between STRUT and NURSE, with the latter being considerably more front and lower than the former. These differences strongly suggest that second-generation East African Indians have not acquired the patterns characteristic of the first generation. In fact, a comparison with the hybrid Leics-SSBE speakers from Evans & Iversen's (2007) Ashby study (see chapter 7 and section 8.1.1 above) showed that the vowel configurations of the two groups are remarkably similar. For this reason, I argued that second-generation East African Indians have adopted educated East Midlands English patterns.

Lastly, the analysis of vowel duration found the second generation to display the same gender pattern as the first generation, with female speakers invariably producing longer vowel durations than male speakers (the gender differences in the durations of STRUT and NURSE were somewhat larger for the second generation than the first though; see section 7.2.2.1). Moreover, the gen2 vowels were ranked in the same order as the gen1 vowels: NURSE was longest, STRUT was shortest, and FOOT had an intermediate duration. However, the two generations tended to differ in the size of the duration differences between each vowel pair: the duration difference between FOOT and STRUT was larger for the first generation, whereas those between STRUT and NURSE and between FOOT and NURSE

were larger for the second. Second-generation East African Indians thus parallel Evans & Iverson's (2007) Ashby informants in having a clearer length contrast between NURSE, on the one hand, and FOOT and STRUT, on the other. On these grounds, I claimed that this group shows greater affiliation with East Midlands English durational patterns (for these vowels at least) than with those found among first-generation East African Indians.

To answer the second research question then, the results indicate that with regard to postvocalic /r/ and the FOOT, STRUT and NURSE vowels, second-generation East African Indians in Leicester have not acquired the linguistic patterns characteristic of the first generation. Transmission across generations seems unlikely for these features, and I argued that the second generation's use of these variables can most plausibly be accounted for in terms of accommodation to an educated variety of East Midlands English.

## **8.2 Dialect variation and change among East African Indians in Leicester: the broader picture**

### **8.2.1 First generation**

The finding that overall, first-generation East African Indians in Leicester maintain Indian English patterns in their production of postvocalic /r/ and the FOOT, STRUT and NURSE vowels confirms Schmied's (2004) claim that the variety of English spoken by the Indian population in East Africa diverges from (Black) East African English, as well as Hancock & Angogo's (1982) observation that the Indian community in East Africa tends to retain Indian English features (see section 1.3). Judging from the available evidence, East African Indians thus differ from the other major strand of the Indian diaspora in Africa, namely the South African Indian community. As noted in section 2.2, South African Indian English, which underwent a shift from L2 to L1, displays some continuity with Indian English but also diverges noticeably from this variety, and tends to lack typical Indian English features such as the monophthongisation of FACE and GOAT, retroflexion of /t/ and /d/, the interchange of /v ~ w/ and (variable) rhoticity (Mesthrie 1992, 2004a, 200b).

First-generation migrants have not been a major focus in research on English in the Indian diaspora, but those studies that did look at the speech of gen1 subjects invariably found them to make use of L1-derived features (cf. sections 2.1 and 2.2). In Britain, these investigations include Evans et al. (2007), who reported that the vowel space of first-

generation Gujarati migrants in London resembled that of their native language; McCarthy et al. (2011), who found that first-generation migrants from the London Bangladeshi community frequently used variants similar to those of Sylheti, their L1; and Sharma & Sankaran (2011), whose India-born informants from the Southall Punjabi community displayed retroflexion of /t/, an Indian English feature. Moreover, retention of Indian English variants is also attested for first-generation Indian immigrants in the San Francisco Bay area (Sharma 2005a).

Sharma (2005a) found that the use of phonological variables (rhoticity, /l/-velarisation, aspiration) among her subjects depended mostly on their attitudes towards cultural contact with the United States (see section 2.2). Factors such as speakers' proficiency level, age, and time spent in the US were generally not significant or did not display the predicted gradient patterns (except for time spent in the US in the case of /l/-velarisation; Sharma 2005a: 214). In contrast, time spent in the UK was the most significant social factor constraining the use of retroflex /t/ among first-generation migrants in Southall (Sharma & Sankaran 2011). The authors report that

India-born participants who have lived in the U.K. for 3612 years show a sharp decline in use of /t/. These individuals are often negotiating work situations with British English speakers and struggling to find a place in their new environment. (...) Intriguingly, /t/ use increases again among the long-stay (> 12 years) group. These individuals have often settled with families in very Asian networks and may have less need to accommodate to British English or may have regained confidence in their original variety (Sharma & Sankaran 2011: 417-8).

It is difficult to compare Sharma & Sankaran's (2011) findings with the influence of length of residence on patterns of linguistic variation among first-generation East African Indians. This is because, with the exception of two speakers who had lived in Leicester for 11 and 24 years, respectively, the gen1 participants of the present study had all lived in the city for 30 years or more and were well-settled in their community. Recall, however, that older, retired informants produced rhotic variants of coda /r/ more frequently than younger, working-age subjects. The parallel increase in the use of Indian English variants in Sharma & Sankaran's long-stay group and among older East African Indians is interesting as it seems to be driven by the same forces: lesser contact with, and accommodation to, the local variety of British English.



As noted earlier, the first-generation participants of this study were born and raised in Kenya and Uganda and most of them showed strong emotional affiliation with East Africa, as well as a sense of distinctiveness vis-à-vis direct migrants from the subcontinent (see section 3.3). This makes linguistic affiliation with East African English a possible outcome of their migratory experience. Two related questions are therefore why their production of postvocalic /r/ and the three vowels appears to diverge from the patterns attested in this variety and why first-generation speakers parallel the tendency of direct South Asian migrants to retain Indian English patterns instead (with the already-mentioned caveat that in some cases influence from East African English cannot be excluded, e.g. as regards gen1 subjects' relatively low rhoticity levels). Evidence from the social history of the community accounts for these tendencies, supporting the findings presented in chapters 6 and 7.

As shown in chapter 3, colonial society in East Africa was divided along ethnic lines and although there was some variation across different subgroups of the East African Asian diaspora, Indian migrants generally displayed a great deal of *ö*communalist zealotry<sup>ö</sup> (Twaddle 1990: 155), i.e. a strong orientation towards their own communities. The research on the history of East African Asians and the personal accounts of the migrants interviewed for the present study indicate that Indians mostly lived in ethnically segregated areas and attended predominantly Indian schools. Intermarriages were rare and the limited contact that occurred with the African population tended to be of a relatively superficial type, often in the form of dealings with customers or interaction with African housemaids and drivers or other kinds of African employees. Moreover, knowledge of English was not widespread in the African population at the time. As Schmied (2004: 921) points out, *ö*the expansion of English down the social hierarchy began mainly at the end of colonial rule<sup>ö</sup>. Accordingly, informants of the present study reported that interaction with Africans frequently took place in Kiswahili, the main lingua franca of the region (cf. section 3.2.2.3). The external evidence therefore suggests that for the Indian diaspora in East Africa contact with East African English is likely to have been limited, and that influence from this variety is rather unlikely.

By the same token, the social history of the community provides an explanation of why East African Indians seem to have retained Indian English patterns. Even though many South Asians who settled in East Africa during the early period of British expansion are likely to have had no or only limited knowledge of English, the number of incoming

migrants who spoke the language increased with the years, as more and more qualified workers and professionals were attracted to the region (see section 3.2.2.3). This meant continuous input from varieties of English spoken on the Indian subcontinent. In East Africa, the racial segregation characteristic of colonial society and social exclusiveness of the local Indian communities are likely to have favoured the maintenance of these forms of English. Indians who grew up in Africa tended to acquire English in school contexts and crucially, the transmission of the language took place principally via teachers imported from the Indian subcontinent. Moreover, it was relatively common for migrants to go back to their original homeland for further education. The joint effect of all these factors therefore appears to have ensured continuity with subcontinental Indian English in the East African strand of the Indian diaspora.

Finally, the interviews conducted for the present study also indicate that among East African Indians in Leicester, strong ties to the Indian subcontinent were maintained in the second stage of migration and survive to the present day. As discussed in section 3.3, most gen1 participants stated that they intended to remain in Britain, but they still returned to India regularly to visit relatives and for travelling purposes. Although many felt that their experience in East Africa made them culturally different from direct migrants, Indian cultural and religious traditions formed an essential part of their heritage. It is thus likely that continuing ties with the original homeland contributed to the retention of Indian English patterns among first-generation East African Indians in Leicester (even if, as argued earlier, partial accommodation to East Midlands English is likely for this group, especially among working-age informants).

### **8.2.2 Second generation**

The second generation's adoption of the patterns attested for postvocalic /r/ and the FOOT, STRUT and NURSE vowels in (educated) East Midlands English parallels the findings of Evans et al. (2007) and McCarthy et al. (2011). Evans et al. (2007) showed that the L1-influenced vowel system of first-generation Gujarati migrants in London had not been acquired by second-generation subjects, who approximated Southern Standard British English (SSBE) norms instead (see section 2.1.2). Likewise, McCarthy et al. (2011) reported that locally-born speakers from the London Bangladeshi community diverged from first-generation informants by using phonetic variants of /l/, /r/ and of the British

English monophthongs that resembled those of SSBE, rather than those of Sylheti. As shown in chapter 2, however, the great majority of investigations of English in the British Asian diaspora found locally-born speakers to retain (and often reallocate) L1-derived features, with ethnically marked variants spreading, in some cases, beyond the communities in which they originated. These studies include Rampton (1995) for the South Midlands; Heselwood & McChrystal (2000) for Bradford; Khan (2006) for Birmingham; Lambert et al. (2007), Stuart-Smith et al. (2011), and Alam & Stuart-Smith (2011) for Glasgow; Kirkham (2011) for Sheffield; as well as Harris (2006), Fox (2007), Hirson & Sohail (2007), Sharma (2011b), Sharma & Sankaran (2011), Rampton (2011), Torgersen et al. (2006), Kerswill et al. (2008), and Cheshire et al. (2011) for London.

The findings reported in these studies raise the question of why second-generation East African Indians in Leicester do not appear to follow the tendency towards divergence from British English displayed by other groups of locally-born South Asians. Since the retention and reallocation of L1-derived features among second-generation speakers is widely attested in research on English in the British Asian diaspora, a cognitive explanation such as Chambersø (2002) foreign accent filter hypothesis is unlikely (cf. section 2.1.2). Rather, it seems more plausible that the absence of Indian English features among gen2 participants is due to the social characteristics of the speakers and/or to the method of data collection employed in the present study.

Among the social factors that may be of relevance in this respect are the speakersø degree of bilingualism, ethnic affiliation, and socioeconomic status. In the discussion of the results for postvocalic /r/, I suggested that one reason why second-generation participants showed accommodation to East Midlands English patterns in their use of this variable may be that proficiency in Gujarati varied greatly among them (see section 6.1.2.2). While some reported that Gujarati was their main home language or that they used both Gujarati and English at home, several stated that their main home language was English and that they did not consider themselves to be fluent in Gujarati. It may thus be that influence from the heritage language is less strong for this group than for British Asian speakers like the Punjabi-English bilinguals of Hirson & Sohailø (2007) study, who were fluent in both languages and mostly used Punjabi at home. As noted in section 2.1.2, however, Kirkham (2011) reported that among second-generation Pakistani adolescents in Sheffield the use of L1-derived features did not necessarily correlate with their proficiency level in Punjabi, and Sharma & Sankaran (2011) found the degree of bilingualism to have no strong effect on the

use of retroflex /t/ among their Southall informants. It is therefore not clear whether and to what extent proficiency in the heritage language constrains the use of L1-influenced accent traits among British-born South Asian migrants, and it may very well be that other social factors have a greater effect on the patterns of linguistic variation displayed by second-generation East African Indians.

In section 6.1.2.2, I pointed to ethnic affiliation as a possible source of influence on the second generation's adoption of East Midlands English patterns of usage of postvocalic /r/. This was motivated by the fact that in Hirson & Sohail's (2007) study, Punjabi-English bilinguals who identified as British-Asian tended to display southeastern British English patterns of /r/-pronunciation, whereas the Asian-identified informants exhibited Punjabi-influenced patterns. Likewise, Glasgow Pakistani high school girls who were more westernised generally disfavoured L1-derived features the most (Lambert et al. 2007, Stuart-Smith et al. 2011, Alam & Stuart-Smith 2011). Since the second-generation participants of this study almost invariably identified as British Asian and tended to have positive attitudes towards Leicester (see section 3.3), these affiliations may have contributed to accommodation to the local variety of English for this group.

Another social factor that is very likely to have led second-generation participants to adopt East Midlands English patterns and, more specifically, to accommodate to a more educated form of the variety is their socioeconomic status. Section 3.3 showed that the history of settlement of East African Indians in Leicester and Britain is characterised by considerable upward social mobility and that, although they generally experienced a drop in status upon arrival in the UK, their socioeconomic situation improved greatly within a relatively short period of time. The fact that most second-generation participants of the present study had attended (or were going to attend) university-level education and that they tended to have middle-class occupations (cf. section 5.1) distinguishes them from many of the locally-born British Asians whose speech has been previously investigated. To give but a few examples: the Bangladeshi community in Tower Hamlets is one of the most disadvantaged communities of the British Asian diaspora and has been referred to as 'the new working class of the traditional East End' (Fox 2007: 3). Heselwood & McChrystal's (2000) study on bilingual Punjabi-English children in Bradford was carried out in one of the least affluent areas of the city (cf. Heselwood & McChrystal 1999). Khan's (2006) investigation of linguistic variation among Birmingham adolescents from Pakistani and other ethnic backgrounds was restricted to working-class informants, and research on the

London multi-ethnolect similarly focused on working-class areas of the capital (see e.g. Cheshire et al. 2011).

In contrast, the Southall informants of Sharma (2011b) and Sharma & Sankaran (2011) mostly came from a lower middle class background (with some belonging to the working class and some to the middle middle class; Sharma & Sankaran 2011: 413). A group of informants who are even more similar to the gen2 participants of the present study in terms of socioeconomic background (and heritage language) are the second-generation Gujarati migrants of Evans et al. (2007). Evans et al. (2007: 1744) observe that even if their subjects *‘‘had lived in Wembley all their lives and were resident in Wembley at the time of testing, they were all socially mobile. That is, they had all attended or were attending university in London and worked or hoped to work in professional jobs.’’* According to the authors, the social mobility of their second-generation informants accounts for their tendency to produce vowels that approximated the Standard Southern British English (SSBE) system:

[i]t is thus possible that these subjects used more conservative (i.e., SSBE) variants to fit in with this community. Indeed, informal interviews with subjects suggested that they felt it was important to use a standard rather than an *‘‘ethnic’’* accent in order to be accepted in their university community or workplace (Evans et al. 2007: 1744).

Evans et al. (2007: 1744) conclude their study by emphasising that *‘‘whilst immigrant communities may often be sources of innovation and divergence, factors such as social mobility and identity also play an important role in determining an individual’s accent within these communities.’’* Considering the similarities in their social characteristics, the parallels in the linguistic behaviour of second-generation Gujarati migrants in London and second-generation East African Indians in Leicester are particularly intriguing, and it seems likely that social mobility is also an important factor favouring accommodation to educated East Midlands English among the gen2 participants of this study, possibly in conjunction with other forces.

It is also important to consider, however, whether and to what extent the results for the second generation may not simply be a consequence of factors such as the method of data collection. The sociolinguistic interviews that I carried out for this study represent of course a rather formal speech situation (even more so as they were conducted by an ethnic outsider; cf. section 5.1). As Sharma (2011b) demonstrated in her investigation of the

Southall Punjabi community, some groups of locally-born British Asians display sharp style-shifting across different contexts (see section 2.1.2). Recall, for instance, that while the younger second-generation women of her study made hardly any use of retracted /t/ during the interviews, an analysis of self-recorded data revealed that they did use this feature at home. It could thus be that second-generation East African Indians make use of Indian English variants in informal contexts, but that these did not surface in the interviews because the interviewees shifted to a formal style that they considered appropriate to this type of speech situation.

In this regard, one may note that Evans et al. (2007) and McCarthy et al. (2011), who found their informants to produce SSBE-like variants, are both experimental studies based on word list data.<sup>1</sup> However, while differences in data collection are certainly likely to account for some of the differences reported across studies, it is clear that they do not tell the whole story. The use of L1-derived features by UK-born South Asians is in fact also attested in investigations that used controlled datasets, e.g. the picture-naming tasks employed in Heselwood & McChrystal (2000) and Hirson & Sohail (2007). The perhaps most illustrative case are the findings reported by Lambert et al. (2007), Stuart-Smith et al. (2011), and Alam & Stuart-Smith (2011) for Glasgow Asians. As mentioned in section 2.1.2, these findings are based on two complementary studies, one involving three years of participant observation in a high school conducted by a member of the Glasgow Asian community, and the other involving the controlled collection of word list and reading passage data by a monolingual Glaswegian. Yet, both studies found locally-born Glasgow Asians to use L1-derived features.

Lastly, another issue that requires consideration is the choice of the linguistic variables. It is possible that the gen2 participants of this study approximate (educated) East Midlands English patterns for postvocalic /r/ and the FOOT, STRUT and NURSE vowels but that they diverge from this dialect along other dimensions. L1-influenced accent traits attested in several groups of locally-born British Asians are, for instance, monophthongal qualities for FACE and GOAT, retracted realisations of /t/, and clear variants of coda /l/ (see section 2.1). In the present study, these features were commonly used by first-generation

---

<sup>1</sup> The lack of L1-derived features reported by McCarthy et al. (2011) for locally-born Bengali informants is particularly noteworthy, considering the low socioeconomic status of Bangladeshi migrants in Britain in general (see also Fox 2007). It is not known, however, whether this also applied to the individuals who were tested in McCarthy et al.'s study (who came from the London Boroughs of Tower Hamlets and Camden; McCarthy et al. 2011: 1355).

migrants but did not appear to be characteristic of the speech of second-generation informants. It could be, however, that a more fine-grained analysis would reveal subtle differences between the production of these variables by gen2 speakers and their occurrence in (educated) East Midlands English.

All in all, it seems unlikely that a single factor accounts for the differences in linguistic behaviour that were reported for different groups of second-generation British Asians and, in particular, for the fact that many of the groups whose speech was investigated were found to diverge from the local variety of British English, whereas a few were not. At least with regard to the linguistic variables analysed here, the second-generation East African Indians interviewed for this study appear to belong to the latter category. The discussion in this section indicated that, although methodological choices may also play a role, their social mobility and factors such as identity and group affiliation are likely to have contributed substantially to their adoption of educated East Midlands English features.

### **8.3 Summary**

This chapter summarised the findings of the present study and looked into the similarities and differences between the patterns of variation and change found among East African Indians in Leicester and those reported for other Indian overseas communities. The discussion showed that the tendency towards retention of Indian English patterns exhibited by first-generation participants for the variables under investigation parallels that of direct first-generation migrants from South Asia. I argued that several sociohistorical factors make influence from East African English unlikely for this group, pointing to continuity with Indian English instead. In contrast, the second generation's accommodation to the local variety of English diverges from the findings of many other studies on locally-born British Asians, whose subjects tended to retain L1-derived features and often adapt them to new structural and social functions. I claimed that this discrepancy could partly be a consequence of methodological choices, but that differences in the social characteristics of the speakers are also likely to play an important role.

## 9. Conclusion

This study provided a two-fold contribution to the growing body of research on English in the Indian diaspora. On the one hand, it provided insight into patterns of dialect variation and change in an Indian diasporic group whose variety of English had not been described yet, the East African Indian community in Leicester. On the other hand, it investigated the potential of secondary diaspora situations, an under-researched type of contact setting, to improve our understanding of the linguistic consequences of migration and contact. I sought to establish 1) whether the production of postvocalic /r/ and the FOOT, STRUT and NURSE vowels by first-generation East African Indians in Leicester showed any parallels to Indian English, East African English, or East Midlands English and 2) whether and how the patterns characteristic of the first generation changed among second-generation speakers.

A detailed summary of the findings is provided in section 8.1. Overall, the analysis revealed that the two generations differed considerably in their use of the four linguistic variables. The production of postvocalic /r/ and the FOOT, STRUT and NURSE vowels by first-generation participants was found to resemble most closely the patterns attested for these variables in Indian English (even though partial accommodation to the local variety of British English is also possible for this group). Second-generation speakers did not appear to have acquired these patterns, however, showing accommodation to an educated variety of East Midlands English instead. I argued that these findings can be accounted for by the history of the East African Indian community and the social characteristics of the participants. For the first generation, several socio-historical factors are likely to have favoured continuity with Indian English. These include continuous input from imported Indian teachers and other new arrivals from the subcontinent in British East Africa, the racial segregation characteristic of colonial society, as well as the strong orientation of East African Indians towards their own communities and their maintenance of close ties with the homeland. The adoption of educated East Midlands English by second-generation participants is most likely determined by their middle-class background, possibly in conjunction with other factors such as their affiliation with a British-Asian identity and positive orientation towards the host community, Leicester.

What do these findings suggest about the research potential of twice migrant communities then? As argued in section 1.2, double diaspora situations raise the question of how such complex migration patterns affect the varieties of English spoken by immigrant



communities and, in particular, whether contact with the dialects, languages and cultures of three different societies leads to linguistic outcomes that differ from those found in primary diaspora situations. The evidence from this study indicates that for East African Indians in Leicester, this does not appear to be the case. Chapter 8 showed that the first generation's maintenance of Indian English patterns for postvocalic /r/ and the FOOT, STRUT and NURSE vowels parallels the retention of L1-derived features reported for first-generation direct migrants from South Asia. This finding is notable because it suggests that even in cases where previous settlement in another country leads twice migrants to develop a strong sense of cultural distinctiveness vis-à-vis direct migrants, this sense of a separate identity does not necessarily result in linguistic divergence. Among East African Indians in Leicester, this feeling of cultural distinctiveness appeared, moreover, to be largely restricted to the first generation, as second-generation speakers tended to identify with a more general British Asian ethnicity. The second generation's adoption of educated East Midlands English patterns differs from the tendency towards divergence reported for many other locally-born British Asians, but it does parallel the linguistic behaviour of at least some speakers, especially those from comparable socioeconomic backgrounds.

Since for East African Indians in Leicester this outcome seems to have been mainly determined by socio-historical factors, an interesting question that remains is whether different linguistic outcomes may be found in secondary diaspora situations shaped by different conditions – such as those experienced by the descendants of Indian indentured labourers from Fiji who migrated to New Zealand (Hundt 2014, in preparation), Australia, and North America, or those from Suriname who flew to the Netherlands (see section 1.1). While some groups of twice migrants returned to South Asia (e.g. Indians from Burma and Malaya) and some mostly migrated to the same place (e.g. the Suriname Indians), others, like the Indian communities in Fiji and East Africa, were scattered around the globe. Another intriguing question is therefore how members of the same secondary diaspora who settled in different parts of the world adapted to local conditions, and whether they display different patterns of dialect variation and change.

A related area of interest concerns the heritage languages. As noted in section 3.3, the participants of this study generally considered their variety of Gujarati to differ from those found on the subcontinent. Lexical borrowing from Kiswahili was reported to be common in East Africa and a number of second-generation speakers stated that they had grown up using Kiswahili loanwords when speaking Gujarati without being aware of their

origin. The examples mentioned by participants (i.e. words referring to food and household items) appear to reflect the type of casual contact that Indians had with the local African population. This raises the question whether settlement in East Africa may have had a greater impact on the variety of Gujarati spoken by East African Indians than on their English, and whether the heritage languages may generally be more affected by such complex migration patterns than second-language varieties.

In addition to the more general questions about language contact and change in secondary diaspora situations, the present study indicates that a number of other issues need further investigation, several of which were already mentioned in the empirical chapters. Some concern methodology, e.g. the problems of comparability between members of such complex diasporic communities (sections 5.1 and 6.2.2), vowel normalisation across speakers with different vowel space shapes (section 7.1.1.2), and the potential influence of the use of conversational data (as opposed to word list data) on the lack of a clear qualitative STRUT-NURSE distinction among first-generation East African Indians (section 7.2.1.1). Others concern under-researched language phenomena such as the patterns of occurrence of linking /r/ and intrusive /r/ in the three input varieties and, one may add, in second-language varieties in general (section 6.1.2.1). Moreover, one major difficulty in the interpretation of the results was the paucity of research, particularly of quantitative investigations, on the input varieties. This is particularly true for East African English and East Midlands English. More work on these varieties is greatly needed.

As regards the East African Indian community in Leicester, this study indicates several directions for future research. One is related to the scarcity of quantitative investigations on the input varieties just mentioned. This could be addressed by carrying out a comparative study including members of the local white British community and direct migrants from the same first-language backgrounds as East African Indians (i.e. mainly Gujarati and Punjabi). An investigation of this kind would provide further evidence with regard to the patterns of feature maintenance and loss exhibited by East African Indians.

Another possible line of enquiry concerns the linguistic variables. Beyond postvocalic /r/ and the FOOT, STRUT and NURSE vowels, a number of other features await investigation. For instance, a follow-up study comparing the production of monophthongal realisations of FACE and GOAT or retracted variants of /t/ by first- and second-generation speakers could provide an empirical confirmation of the observation that these features commonly occurred in the speech of first-generation informants, and look into the question

whether second-generation speakers really diverge from other locally-born British Asians in the use of these variables (see section 8.2.2).

Finally, inter-speaker variability is also an important aspect that requires further investigation. While chapter 6 looked into variation in the use of postvocalic /r/ within the first generation, revealing marked differences in rhoticity levels across individual speakers, the analysis of FOOT, STRUT and NURSE focused on variation at group level. This has generally also been the case for acoustic studies on the vowel systems of Indian speakers from subcontinent and in the diaspora (e.g. Wiltshire 2005; Wiltshire & Harnsberger 2006; Evans et al. 2007; McCarthy et al. 2011). However, Maxwell & Fletcher (2009) demonstrated that among their Hindi and Punjabi L1 subjects there were considerable differences in vowel production across individuals. Inter-speaker variability appears to be especially relevant when looking at features such as the presence or absence of a qualitative contrast between two vowels. Recall, for instance, that in Ferragne & Pellegrino (2010) study of 13 British English accents the group mean of the vowel in *Hudd* (STRUT) for Birmingham was located near the centre of the vowel space and displayed only little overlap with FOOT, as is typical of educated varieties of northern English. An auditory analysis revealed that half of the 20 Birmingham speakers lacked a contrast between *hood* and *Hudd*, whereas the other half distinguished the two vowels. As Ferragne & Pellegrino (2010: 10) point out, this exemplifies why computing averages on formant values may prove misleading.

Even though inter-speaker variability with regard to the presence vs. absence of qualitative contrasts was not as marked in the present study, there were some noticeable differences in the production of FOOT, STRUT and NURSE across individual speakers. For example, most first-generation speakers followed the group pattern of having no clear distinction between STRUT and NURSE, but for one female informant, speaker N, the two vowels were located much further apart in the vowel space, with the quality of STRUT being similar to that of START. The reason for this difference is not clear. Moreover, while no informant appeared to have a complete homophony between FOOT and STRUT, some second-generation participants, e.g. speaker A, speaker H and speaker P, produced noticeably higher (broader) variants for STRUT than the rest of their group. It is remarkable, in this regard, that even if speaker A and speaker H paralleled other second-generation subjects in identifying as British Asian, they displayed a more ambiguous attitude towards their mixed heritage (for instance, they reported to feel that locally-born British Asians

were in a difficult position which involved being part of both British and Asian culture but also being caught in the middle between the two). Both showed a somewhat stronger affiliation with the British component of their heritage. In contrast, the third second-generation participant who tended to use more northern-like variants for STRUT, speaker P, had a very positive attitude towards her mixed ethnicity. Beyond broad categories such as ~~British Asian~~, the relationship between linguistic variation, ethnic identity, and attitudes towards the host community is likely to be a very complex one in secondary diaspora situations, and is doubtlessly a promising topic for further research.

In conclusion, this study indicates that patterns of language variation and change in double diaspora situations are a complex and fascinating area of sociolinguistic enquiry, and that there is much room for further research on the topic, both among East African Indians in Leicester and in other twice migrant communities.

## 10. References

- Abdulaziz, Mohamed M.. 1991. East Africa (Tanzania and Kenya). In Jenny Cheshire (ed). *English Around the World: Sociolinguistic Perspectives*. Cambridge: Cambridge University Press, 391-401.
- Adank, Patti. 2003. *Vowel Normalization: A Perceptual-Acoustic Study of Dutch Vowels*. PhD Dissertation, University of Nijmegen.
- Adank, Patti, Roel Smits and Roeland van Hout. 2004. A comparison of vowel normalization procedures for language variation research. *Journal of the Acoustical Society of America* 116: 3099-107.
- Adank, Patti, Roeland van Hout and Hans van de Velde. 2007. An acoustic description of the vowels of northern and southern standard Dutch II: Regional varieties. *Journal of the Acoustical Society of America* 121: 2, 1130-1141.
- Agnihotri, R.K. 1994. Sound patterns of Indian English: A sociolinguistic perspective. In R.K. Agnihotri and A.L. Khanna (eds). *Second-Language Acquisition: Socio-cultural and Linguistic Aspects of English in India*. New Delhi / Thousand Oaks / London: Sage Publications, 235-246.
- Agnihotri R.K. and Anju Sahgal. 1985. Is Indian English retroflexed and r-full? *IJOAL* 11: 1, 97-108.
- Alam, Farhana and Jane Stuart-Smith. 2011. Identity and ethnicity in /t/ in Glasgow-Pakistani high-school girls. *Proceedings of ICPhS XVII, Hong Kong*, 17-21 August 2011, 216-219.
- Angogo, Rachel and Ian Hancock. 1980. English in Africa: Emerging standards or diverging regionalisms ? *English World-Wide* 1: 1, 67-96.
- Asprey, Esther. 2007. Investigating residual rhoticity in a non-rhotic accent. *Leeds Working Papers in Linguistics and Phonetics* 12, 78-101.
- Baayen, R.H.. 2008. *Analyzing Linguistic Data: A Practical Introduction to Statistics Using R*. Cambridge: Cambridge University Press.
- \_\_\_\_\_. 2011. languageR: Data sets and functions with *Analyzing Linguistic Data: A Practical introduction to statistics*. R package version 1.4. <http://CRAN.R-project.org/package=languageR>, accessed 2.01.13.

- Ballard, Roger. 2004. The current demographic characteristics of the South Asian presence in Britain: An analysis of the results of the 2001 Census. Manchester: University of Manchester Centre for Applied South Asian Studies.  
<http://www.casas.org.uk/papers/pdfpapers/sasians2001.pdf>, accessed 2.01.13.
- Bakhtin, Mikhail M.. 1981 [1935]. *The Dialogic Imagination*. Austin: University of Texas Press.
- Bansal, R.K. 1978. The phonology of Indian English. In Ramesh Mohan (ed). *Indian Writing in English*. Bombay: Orient Longman, 101-128.
- \_\_\_\_\_. 1990. The pronunciation of English in India. In Susan Ramsaran (ed). *Studies in the Pronunciation of English: A Commemorative Volume in Honour of A.C. Gimson*. London, New York: Routledge, 219-230.
- Barber, Charles, Joan C. Beal and Philip A. Shaw. 2009. *The English Language: A Historical Introduction*. 2<sup>nd</sup> ed. Cambridge: Cambridge University Press.
- Barras, William Simon. 2010. *The Sociophonology of Rhoticity and R-Sandhi in East Lancashire English*. Edinburgh: Unpublished PhD Thesis.
- Bates, Douglas. 2010. How obtain the estimated scale parameter as in older lmer function version. R-sig-mixed-models@r-project.org.  
<http://permalink.gmane.org/gmane.comp.lang.r.lme4.devel/3791>, accessed 2.01.13.
- Bates, Douglas, Martin Maechler and Ben Bolker. 2011. lme4: Linear mixed-effects models using S4 classes. R package version 0.999375-42. <http://CRAN.R-project.org/package=lme4>, accessed 2.01.13.
- Bayley, Robert. 2002. The quantitative paradigm. In J.K. Chambers, Peter Trudgill, and Natalie Schilling-Estes (eds). *The Handbook of Language Variation and Change*. Malden, MA: Blackwell Publishing, 117-141.
- Beal, Joan. 2004. English dialects in the North of England: Phonology. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 113-133.
- Becker, Kara. 2009. /r/ and the construction of place identity on New York City's Lower East Side. *Journal of Sociolinguistics* 13: 5, 634-658.
- Boersma, Paul and David Weenink. 2010. Praat: doing phonetics by computer. Version 5.1.25. Retrieved January 20, 2010, from <http://www.praat.org/>.

- Britain, David and Peter Trudgill. 1999. Migration, new-dialect formation and sociolinguistic refunctionalisation: Reallocation as an outcome of dialect contact. *Transactions of the Philological Society* 97: 2, 245-256.
- Britain, David and Sue Fox. 2009. The regularisation of the hiatus resolution system in British English ó A contact-induced ðvernacular universalø? In Markku Filppula, Juhani Klemola and Heli Paulasto (eds). *Vernacular Universals and Language Contacts: Evidence from Varieties of English and Beyond*. New York: Routledge, 177-205.
- Brown, Colin. 1984. *Black and White Britain*. London: Heinemann.
- Brown, Judith M. 2006. *Global South Asians: Introducing the Modern Diaspora*. Cambridge: Cambridge University Press.
- Chambers, Jack. 2002. Dynamics of dialect convergence. *Journal of Sociolinguistics* 6, 117-130.
- Chambers, J.K. and Peter Trudgill. 1998. *Dialectology*. 2<sup>nd</sup> ed. Cambridge: Cambridge University Press.
- Chand, Vineeta. 2010. Postvocalic (r) in urban Indian English. *English World-Wide* 31: 1, 1-39.
- Cheshire, Jenny and Sue Fox. 2009. *Was/were* variation: A perspective from London. *Language Variation and Change* 21, 1-38.
- Cheshire, Jenny, Paul Kerswill, Sue Fox and Eivind Torgersen. 2011. Contact, the feature pool and the speech community: The emergence of Multicultural London English. *Journal of Sociolinguistics* 15:2, 151-196.
- CIEFL. 1972. *The Sound System of Indian English*. Monograph 7. Hyderabad: Central Institute of English and Foreign Languages.
- Clark, Urszula. 2004. The English West Midlands: Phonology. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 134-162.
- Clarke, Colin, Ceri Peach and Steven Vertovec. 1990. Introduction: Themes in the study of the South Asian diaspora. In Colin Clarke, Ceri Peach and Steven Vertovec (eds). *South Asians Overseas: Migration and Ethnicity*. Cambridge: Cambridge University Press, 1-29.

- Clopper, Cynthia. 2009. Computational methods for normalizing acoustic vowel data for talker differences. *Language and Linguistics Compass* 3: 6, 1430-42.
- Cox, Felicity. 2006. The acoustic characteristics of /hVd/ vowels in the speech of some Australian teenagers. *Australian Journal of Linguistics* 26: 2, 147-179.
- Deterding, David. 1997. The formants of monophthong vowels in Standard Southern British English pronunciation. *Journal of the International Phonetic Association* 27, 47-55.
- Devadas, Vijay. 2006. The *kangani* and *maistry* systems. In Brij V. Lal, Peter Reeves, and Rajesh Rai (eds). *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press, 53-57.
- Di Paolo, Marianna, Malcah Yaeger-Dror and Alicia Beckford Wassink. 2011. Analyzing vowels. In Marianna Di Paolo and Malcah Yaeger-Dror (eds). *Sociophonetics. A Student's Guide*. London, New York: Routledge, 87-106.
- Docherty, Gerard J.. 2010. Phonological innovation in contemporary spoken British English. In Andy Kirkpatrick (ed). *The Routledge Handbook of World Englishes*. London: Routledge, 59-75.
- Docherty, Gerard J. and Paul Foulkes. 1999. Derby and Newcastle: Instrumental phonetics and variationist studies. In Paul Foulkes and Gerard J. Docherty (eds). *Urban Voices: Accent Studies in the British Isles*. London: Arnold, 47-71.
- Eckert, Penelope and Sally McConnell-Ginet. 1992. Think practically and look locally: Language and gender as community-based practice. *Annual Review of Anthropology* 21, 461-90.
- Edwards, Walter F. 1992. Sociolinguistic behavior in a Detroit inner-city black neighborhood. *Language in Society* 21, 93-115.
- Ericsson, Christine and Anna M. Ericsson. 2001. Gender differences in vowel duration in read Swedish: Preliminary results. In *Proceedings of Fonetik 2001, the XIVth Swedish Phonetics Conference, Örenäs, May 30 - June 1, 2001. Working Papers*. Department of Linguistics, Lund University 49: 34-37.
- Evans, Bronwen G., Ajay Mistry and Caroline Moreiras. 2007. An acoustic study of first- and second-generation Gujarati immigrants in Wembley: Evidence for accent convergence? *Proceedings of ICPHS XVI*, Saarbrücken, 6-10 August 2007, 1741-1744.



- Evans, Bronwen G. and Paul Iverson. 2007. Plasticity in vowel perception and production: A study of accent change in young adults. *Journal of the Acoustical Society of America* 121: 6, 3814-3826.
- Fabricius, Anne H.. 2007a. Variation and change in the TRAP and STRUT vowels of RP: A real time comparison of five acoustic data sets. *Journal of the International Phonetic Association* 37: 3, 293-320.
- \_\_\_\_\_. 2007b. Vowel formants and angle measurements in diachronic sociophonetic studies: FOOT-fronting in RP. *Proceedings of ICPHS XVI*, Saarbrücken, 6-10 August 2007, 1477-1480.
- Fabricius, Anne H., Dominic Watt, and Daniel Ezra Johnson. 2009. A comparison of three speaker-intrinsic vowel formant frequency normalization algorithms for sociophonetics. *Language Variation and Change* 21, 413-35.
- Feagin, Crawford. 1990. The dynamics of a sound change in Southern States English: From r-less to r-ful in three generations. In Jerold A. Edmondson, Crawford Feagin and Peter Mülhäusler (eds). *Development and Diversity. Language Variation across Time and Space. A Festschrift for Charles-James N. Bailey*. Arlington: SIL and University of Texas at Arlington Publications, 129-146.
- \_\_\_\_\_. 2002. Entering the community: Fieldwork. In J.K. Chambers, Peter Trudgill, and Natalie Schilling-Estes (eds). *The Handbook of Language Variation and Change*. Malden, MA: Blackwell Publishing, 20-39.
- Ferragne, Emmanuel and François Pellegrino. 2010. Formant frequencies of vowels in 13 accents of the British Isles. *Journal of the International Phonetic Association* 40: 1, 1-34.
- Flynn, Nicholas E.J.. 2007. *A Sociophonetic Comparison of Adolescent Speech in two Areas of Nottingham*. Unpublished MA Dissertation. Colchester: University of Essex.
- \_\_\_\_\_. 2011. Comparing vowel formant normalisation procedures. *York Papers in Linguistics (Series 2)* 11, 1-28.
- \_\_\_\_\_. 2012. A preliminary investigation of the sociophonetics of Nottingham adolescents. In Silvia Calamai, Chiara Celata, Luca Ciucci (eds). *Proceedings of -Sociophonetics, at the Crossroads of Speech Variation, Processing and Communication, Pisa, December 14th-15th, 2010*. Pisa: Edizioni della Normale,

- 21-24. <http://www.sns.it/scuola/edizioni/testionline/sociophonetics/>, accessed 2.01.13.
- Foulkes, Paul. 1997. English [r]-sandhi ó A sociolinguistic perspective. *Histoire Epistémologique Langage* 19: 1, 73-96.
- Foulkes, Paul and Gerard J. Docherty (eds). 1999. *Urban Voices: Accent Studies in the British Isles*. London: Arnold.
- \_\_\_\_\_. 2001. Variation and change in British English /r/. In Hans Van de Velde and Roeland van Hout (eds). *atics. Sociolinguistic, Phonetic and Phonological Characteristics of /r/. Etudes & Travaux* 4. Brussels: ILVP, 27643.
- Fox, Sue P.. 2007. *The Demise of Cockneys? Language Change among Adolescents in the 'Traditional' East End of London*. Unpublished PhD dissertation. University of Essex.
- Gargesh, Ravinder. 2004. Indian English: Phonology. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 992-1002.
- Gerstman, Louis. 1968. Classification of self-normalised vowels. *IEEE Transactions of Audio Electroacoustics* AU-16, 78-80.
- Google Maps. 2012. <http://maps.google.ch/maps?hl=en&tab=ll>, accessed 2.01.13.
- Gordon, Elizabeth, Lyle Campbell, Jennifer Hay, Margaret MacLagan, Andrea Sudbury and Peter Trudgill. 2004. *New Zealand English: Its Origins and Evolution*. Cambridge: Cambridge University Press.
- Grabe, Esther, Brechtje Post and Francis Nolan. 2001. *The IViE Corpus*. Department of Linguistics, University of Cambridge. <http://www.phon.ox.ac.uk/IViE>, accessed 2.01.13.
- Gregory, Robert G.. 1992. *The Rise and Fall of Philantropy in East Africa: The Asian Contribution*. New Brunswick, N.J.: Transaction.
- \_\_\_\_\_. 1993. *South Asians in East Africa: An Economic and Social History, 1890-1980*. Boulder: Westview Press.
- Gries, Stefan Th.. 2009. *Statistics for Linguistics with R: A Practical Introduction*. Berlin, New York: Mouton de Gruyter.
- Gumperz, John J.. 1982. *Discourse Strategies*. Cambridge: Cambridge University Press.

- Hall-Lew, Lauren. 2009. *Ethnicity and Phonetic Variation in a San Francisco Neighborhood*. Unpublished PhD Dissertation. Stanford University, Stanford, CA.
- Hancock, Ian F. and Rachel Angogo. 1982. English in East Africa. In Richard W. Bailey and Manfred Görlach (eds). *English as a World Language*. Ann Arbor: University of Michigan Press, 306-323.
- Harrell, Frank E. (with contributions from many other users). 2012. Hmisc: Harrell Miscellaneous. R package version 3.9-1.  
<http://CRAN.R-project.org/package=Hmisc>, accessed 2.01.13.
- Harris, John. 1996. On the trail of short *u*. *English World-Wide* 17: 1, 1-42.
- \_\_\_\_\_. 2006. Wide-domain *r*-effects in English. *UCL Working Papers in Linguistics* 18, 357-79.
- Harris, Roxy. 2006. *New Ethnicities and Language Use*. Basingstoke: Palgrave Macmillan.
- Hawkins, Sarah and Jonathan Midgley. 2005. Formant frequencies of RP monophthongs in four age groups of speakers. *Journal of the International Phonetic Association* 35: 2, 183-199.
- Hay, Jennifer and Andrea Sudbury. 2005. How rhoticity became /r/-sandhi. *Language* 81: 4, 799-823.
- Heselwood, Barry and Louise McChrystal. 1999. The effect of age-group and place of L1 acquisition on the realisation of Panjabi stop consonants in Bradford: An acoustic sociophonetic study. *Leeds Working Papers in Linguistics and Phonetics* 7, 49-68.
- \_\_\_\_\_. 2000. Gender, accent features and voicing in Panjabi-English bilingual children. *Leeds Working Papers in Linguistics and Phonetics* 8, 45-70.
- Hickey, Raymond. 2004. South Asian Englishes. In Raymond Hickey (ed). *Legacies of Colonial English: Studies in Transported Dialects*. Cambridge: Cambridge University Press, 536-558.
- Hill, Thomas and Pawel Lewicki. 2006. *Statistics: Methods and Applications. A Comprehensive Reference for Science, Industry, and Data Mining*. Tulsa: StatSoft.
- Hillenbrand, James, Laura A. Getty, Michael J. Clark and Kimberlee Wheeler. 1995. Acoustic characteristics of American English vowels. *Journal of the Acoustical Society of America* 97:5, 3099-3111.
- Hirson, Allen and Nabiah Sohail. 2007. Variability of rhotics in Punjabi-English bilinguals. *Proceedings of ICPhS XVI, Saarbrücken, 6-10 August 2007*, 1501-1504.

- Hoffmann, Thomas. 2010. White Kenyan English. In Daniel Schreier, Peter Trudgill, Edgar W. Schneider and Jeffrey P. Williams (eds). *The Lesser-Known Varieties of English: An Introduction*. Cambridge: Cambridge University Press, 286-310.
- \_\_\_\_\_. 2011. The Black Kenyan English vowel system: An acoustic phonetic analysis. *English World-Wide* 32: 2, 147-173.
- Hughes, Arthur, Peter Trudgill and Dominic Watt. 2005. *English Accents and Dialects: An Introduction to Social and Regional Varieties of English in the British Isles*. 4<sup>th</sup> ed. London: Hodder Arnold.
- Hundt, Marianne. 2014. Zero articles in Indian Englishes: A comparison of primary and secondary diaspora situations. In Marianne Hundt and Devyani Sharma (eds). *English in the Indian Diaspora*. Amsterdam: Benjamins, 131-170.
- Hundt, Marianne. In preparation. Language and Identity in the Indian Diaspora ó A Case Study on Fiji Indians in New Zealand. Current research project at the English Department of the University of Zurich.
- Hundt, Marianne and Devyani Sharma (eds). 2014. *English in the Indian Diaspora*. Amsterdam: John Benjamins.
- Huxley, Elspeth. 1956. *White Man's Country: Lord Delamere and the Making of Kenya*. Vol. 2. London: Chatto and Windus.
- Ihalainen, Ossi. 1994. The dialects of England since 1776. In Robert Burchfield (ed). *The Cambridge History of the English Language, Volume 5. English in Britain and Overseas: Origins and Development*. Cambridge: Cambridge University Press, 197-274.
- Jacewicz, Ewa, Robert A. Fox and Joseph Salmons. 2007. Vowel duration in three American English dialects. *American Speech* 82: 4, 367-385.
- Johnson, Daniel Ezra. 2009. Getting off the GoldVarb standard: Introducing Rbrul for mixed-effects variable rule analysis. *Language and Linguistics Compass* 3:1, 359-383.
- \_\_\_\_\_. 2010a. Rbrul manual.  
[http://www.danielezrajohnson.com/Rbrul\\_manual.html](http://www.danielezrajohnson.com/Rbrul_manual.html), accessed 2.01.13.
- \_\_\_\_\_. 2010b. Why stepwise isn't so wise. Paper given at NWAV39 (New Ways of Analyzing Variation). San Antonio: University of Texas.
- Johnson, Keith. 2008. *Quantitative Methods in Linguistics*. Malden, MA: Blackwell Publishing.

- Kachru, Braj B.. 1985. Standards, codification and sociolinguistic realism: The English language in the outer circle. In Randolph Quirk and H. G. Widdowson (eds). *English in the World: Teaching and Learning the Language and Literatures*. Cambridge: CUP, 11-30.
- \_\_\_\_\_. 1994. English in South Asia. In Robert Burchfield (ed). *The Cambridge History of the English Language. Vol. 5. English in Britain and Overseas: Origins and Development*. Cambridge: Cambridge University Press, 497-626.
- Kalra, Virinder S. 2006. United Kingdom. In Brij V. Lal, Peter Reeves, and Rajesh Rai (eds). 2006. *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press, 336-345.
- Kendall, Tyler and Erik R. Thomas. 2010. Vowels: Vowel Manipulation, Normalization, and Plotting. R package version 1.1. <http://CRAN.R-project.org/package=vowels>, accessed 2.01.13.
- Kerswill, Paul and Ann Williams. 2005. Newtowns and koineization: Linguistic and social correlates. *Linguistics* 43, 1023-1048.
- Kerswill, Paul, Eivind Torgersen and Susan Fox. 2008. Reversing 'drift' Innovation and diffusion in the London diphthong system. *Language Variation and Change* 20: 451-491.
- Khadria, Binod. 2006. Post-war migration. In Brij V. Lal, Peter Reeves, and Rajesh Rai (eds). 2006. *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press, 66-70.
- Khan, Arfaan. 2006. *A Sociolinguistic Study of Birmingham English: Language Variation and Change in a Multi-Ethnic British Community*. Unpublished PhD dissertation. Lancaster University.
- Kirkham, Sam. 2011. The acoustics of coronal stops in British Asian English. *Proceedings of ICPhS XVII*, Hong Kong, 17-21 August 2011, 1102-1105.
- Labov, William. 1972a. *Language in the Inner City*. Philadelphia: University of Pennsylvania Press.
- \_\_\_\_\_. 1972b. *Sociolinguistic Patterns*. Philadelphia: University of Pennsylvania Press.
- \_\_\_\_\_. 1994. *Principles of Linguistic Change: Internal Factors*. Oxford, Blackwell.
- \_\_\_\_\_. 2006. *The Social Stratification of English in New York City*. 2<sup>nd</sup> ed. Cambridge: Cambridge University Press.
- \_\_\_\_\_. 2007. Transmission and diffusion. *Language* 83, 3446387.

- Labov, William, Sharon Ash and Charles Boberg. 2006. *The Atlas of North American English. Phonetics, Phonology and Sound Change. A Multimedia Reference Tool*. Berlin, New York: Mouton de Gruyter.
- Lal, Brij V.. 2006a. Introduction. In Brij V. Lal, Peter Reeves, and Rajesh Rai (eds). *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press, 10-15.
- \_\_\_\_\_. 2006b. The indenture system. In Brij V. Lal, Peter Reeves, and Rajesh Rai (eds). *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press, 46-53.
- Lal, Brij V., Peter Reeves, and Rajesh Rai (eds). 2006. *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press.
- Lambert, Kirsten, Farhana Alam and Jane Stuart-Smith. 2007. Investigating British Asian accents: Studies from Glasgow. *Proceedings of ICPHS XVI*, Saarbrücken, 6-10 August 2007, 1509-1511.
- Lass, Roger. 1999. Phonology and morphology. In Roger Lass (ed). *The Cambridge History of the English Language: Vol. III, 1476-1776*. Cambridge: Cambridge University Press, 56-186.
- \_\_\_\_\_. 2006. Phonology and morphology. In Richard Hogg and David Denison (eds). *A History of the English Language*. Cambridge: Cambridge University Press, 43-108.
- Lawson, Eleanor, James M. Scobbie and Jane Stuart-Smith. 2011. The social stratification of tongue shape for postvocalic /r/ in Scottish English. *Journal of Sociolinguistics* 15:2, 256-268.
- Llamas, Carmen. 2001. The sociolinguistic profiling of (r) in Middlesbrough English. In Hans Van de Velde and Roeland van Hout (eds). *r-atics. Sociolinguistic, Phonetic and Phonological Characteristics of /r/. Etudes & Travaux* 4. Brussels: ILVP, 123-139.
- \_\_\_\_\_. 2010. Convergence and divergence across a national border. In Carmen Llamas and Dominic Watt (eds). *Language and Identities*. Edinburgh: Edinburgh University Press, 227-236.
- Lobanov, Boris M.. 1971. Classification of Russian vowels spoken by different speakers. *Journal of the Acoustical Society of America* 49: 2, 606-608.
- Maguire, Warren, April McMahon, Paul Heggarty and Dan De Duij. 2010. The past, present, and future of English dialects: Quantifying convergence, divergence, and dynamic equilibrium. *Language Variation and Change* 22, 69-104.

- Maidment, J.A.. 1995. A neglected feature of British East Midlands accents and its possible implications for the history of a vowel merger in English. In Jack Windsor Lewis (ed). *Studies in General and English Phonetics: Essays in Honour of Professor J. D. O'Connor*. London, New York: Routledge, 379-384.
- Marett, Valerie. 1989. *Immigrants Settling in the City*. London, New York: Leicester University Press.
- \_\_\_\_\_. 1993. Resettlement of Ugandan Asians in Leicester. *Journal of Refugee Studies* 6: 3, 248-259.
- Mathisen, Ann Grethe. 1999. Sandwell, West Midlands: Ambiguous perspectives on gender patterns and models of change. In Paul Foulkes and Gerard J. Docherty (eds). *Urban Voices: Accent Studies in the British Isles*. London: Arnold, 107-123.
- Maxwell, Olga and Janet Fletcher. 2009. Acoustic and durational properties of Indian English vowels. *World Englishes* 28: 1, 52-69.
- McArthur, Tom. 2003. English in India. *The Oxford Guide to World English*. Oxford: Oxford University Press, 311-326.
- McCarthy, Kathleen, Bronwen G. Evans and Merle Mahon. 2011. Detailing the phonetic environment: A sociophonetic study of the London Bengali community. *Proceedings of ICPHS XVII*, Hong Kong, 17-21 August 2011, 1354-1357.
- McMahon, April, Paul Heggarty, Robert McMahon and Warren Maguire. 2007. The sound patterns of Englishes: Representing phonetic similarity. *English Language and Linguistics* 11: 1, 113-142.
- Mesthrie, Rajend. 1992. *English in Language Shift: The History, Structure and Sociolinguistics of South African Indian English*. Cambridge: Cambridge University Press.
- \_\_\_\_\_. 2004a. Indian South African English: Morphology and syntax. In Bernd Kortmann, Edgar W. Schneider, Kate Burridge, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 2. Morphosyntax*. Berlin, New York: Mouton de Gruyter, 974-92.
- \_\_\_\_\_. 2004b. Indian South African English: Phonology. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 953-63.



- \_\_\_\_\_. 2004c. Synopsis: The phonology of English in Africa and South and Southeast Asia. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 1099-1109.
- \_\_\_\_\_. 2010. Socio-phonetics and social change: Deracialisation of the GOOSE vowel in South African English. *Journal of Sociolinguistics* 14: 1, 3-33.
- Mesthrie, Rajend and Rakesh M. Bhatt. 2008. *World Englishes: The Study of New Linguistic Varieties*. Cambridge: Cambridge University Press.
- Milroy, Lesley and Matthew Gordon. 2003. *Sociolinguistics: Method and Interpretation*. Malden, MA: Blackwell Publishing.
- Mufwene, Salikoko S.. 2001. *The Ecology of Language Evolution*. Cambridge: Cambridge University Press.
- Myhill, John. 1988. Postvocalic /r/ as an index of integration into the BEV speech community. *American Speech* 63: 3, 203-213.
- Nagy, Naomi and Patricia Irwin. 2010. Boston (r): Neighbo(r)s nea(r) and fa(r). *Language Variation and Change* 22, 241-278.
- Nearey, Terrance M.. 1978. *Phonetic Feature Systems for Vowels*. Ph.D. Dissertation, University of Alberta. Reprinted by the Indiana University Linguistics Club. Bloomington, IN: Indiana University Linguistics Club.
- Nihalani, Paroo, R.K. Tongue, Priya Hosali and Jonathan Crowther. 2004. *Indian and British English: A Handbook of Usage and Pronunciation*. 2<sup>nd</sup> ed. Oxford: Oxford University Press.
- ONS (Office for National Statistics). 2012. Census 2011.  
<http://www.ons.gov.uk/ons/guide-method/census/2011/index.html>, 2.01.13.
- Oonk, Gijsbert. 2006. East Africa. In Brij V. Lal, Peter Reeves, and Rajesh Rai (eds). 2006. *The Encyclopedia of the Indian Diaspora*. Honolulu: University of Hawai'i Press, 254-262.
- Phillips, Deborah. 1981. The social and spatial segregation of Asians in Leicester. In Peter Jackson and Susan J. Smith (eds). *Social Interaction and Ethnic Segregation*. London: Academic Press, 101-121.
- Piercy, Caroline and David Britain. 2011. A cross-dialectal transatlantic perspective on non-prevocalic /r/. Paper given at NWAV40, October 27-30, 2011, Georgetown University.



- Pingali, Sailaja. 2009. *Indian English*. Edinburgh: Edinburgh University Press.
- Platt, John, Heidi Weber and Ho Mian Lian. 1984. *The New Englishes*. London: Routledge and Kegan Paul.
- R Development Core Team. 2011. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org/>, accessed 2.01.13.
- Rampton, Ben. 1995. *Crossing: Language and Ethnicity among Adolescents*. London: Longman.
- \_\_\_\_\_. 2006. *Language in Late Modernity: Interaction in an Urban School*. Cambridge: Cambridge University Press.
- \_\_\_\_\_. 2011. From 'Multi-ethnic adolescent heteroglossia' to 'Contemporary urban vernaculars' *Language & Communication* 31, 276-294.
- Reynolds, Mike and Mahendra Verma. 2007. Indic languages. In David Britain (ed). *Language in the British Isles*. Cambridge: Cambridge University Press, 293-307.
- Roberts-Thomson, Trish. 2008. The diversity of Leicester: A demographic profile. Leicester City Council.
- Robinson, Vaughan. 1993. Marching into the middle classes? The long-term resettlement of East African Asians in the UK. *Journal of Refugee Studies* 6: 3, 230-247.
- Romaine, Suzanne. 1978. Postvocalic /r/ in Scottish English: Sound change in progress? In Peter Trudgill (ed). *Sociolinguistic Patterns in British English*. London: Edward Arnold, 144-157.
- \_\_\_\_\_. 1995. *Bilingualism*. 2<sup>nd</sup> ed. Oxford: Blackwell.
- Rosenfelder, Ingrid. 2009. Rhoticity in educated Jamaican English: An analysis of the spoken component of ICE-Jamaica. In Thomas Hoffmann and Lucia Siebers (eds). *World Englishes ó Problems, Properties and Prospects: Selected Papers from the 13th IAWC Conference*. Amsterdam/Philadelphia: John Benjamins, 61-82.
- Sahgal, Anju and R.K. Agnihotri. 1988. Indian English phonology: A sociolinguistic perspective. *English World-Wide* 9: 1, 51-64.
- Sankoff, David, Sali Tagliamonte and Eric Smith. 2005. Goldvarb X: A variable rule application for Macintosh and Windows. Department of Linguistics, University of Toronto. <http://individual.utoronto.ca/tagliamonte/goldvarb.htm>, accessed 2.01.13.
- \_\_\_\_\_. 2012. Goldvarb LION: A variable rule application for Macintosh. Department of Linguistics, University of Toronto.

<http://individual.utoronto.ca/tagliamonte/goldvarb.htm>, accessed 2.01.13.

- Schmied, Josef. 1991a. *English in Africa: An Introduction*. London, New York: Longman.
- \_\_\_\_\_. 1991b. National and subnational features in Kenyan English. In Jenny Cheshire (ed). *English Around the World: Sociolinguistic Perspectives*. Cambridge: Cambridge University Press, 420-432.
- \_\_\_\_\_. 2004. East African English (Kenya, Uganda, Tanzania): Phonology. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 918-930.
- \_\_\_\_\_. 2006. East African Englishes. In Braj B. Kachru, Yamuna Kachru, Cecil L. Nelson (eds). *The Handbook of World Englishes*. Malden, Oxford, Victoria: Blackwell Publishing, 188-202.
- Schneider, Edgar W.. 2004. Global synopsis: phonetic and phonological variation in English world-wide. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 1111-1137.
- \_\_\_\_\_. 2007. *Postcolonial English: Varieties around the World*. Cambridge: Cambridge University Press.
- Schneider, Edgar W., Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). 2004. *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter.
- Schreier, Daniel. 2008. *St Helenian English: Origins, Evolution, and Variation*. Amsterdam: John Benjamins.
- \_\_\_\_\_. 2012. Phonological inventories. In Raymond Hickey (ed). *Areal Features of the Anglophone World*. Berlin and New York: Mouton de Gruyter, 277-297.
- Sharbawi, Salbrina and David Deterding. 2010. Rhoticity in Brunei English. *English World-Wide* 31: 2, 121-137.
- Sharma, Devyani. 2005a. Dialect stabilization and speaker awareness in non-native varieties of English. *Journal of Sociolinguistics* 9: 2, 194-224.
- \_\_\_\_\_. 2005b. Language transfer and discourse universals in Indian English article use. *Studies in Second Language Acquisition* 27: 4, 535-66.
- \_\_\_\_\_. 2011a. *Dialect Development and Style in a Diasporic Community*. Project homepage. <http://webspace.qmul.ac.uk/dsharma/esrc/index.html>, accessed 2.01.13.

- \_\_\_\_\_. 2011b. Style repertoire and social change in British Asian English. *Journal of Sociolinguistics* 15: 4, 464-492.
- Sharma, Devyani and Lavanya Sankaran. 2011. Cognitive and social forces in dialect shift: Gradual change in London Asian speech. *Language Variation and Change* 23, 399-428.
- Simo Bobda, Augustin. 2001. East and Southern African English accents. *World Englishes* 20: 3, 269-284.
- \_\_\_\_\_. 2003. The formation of regional and national features in African English pronunciation: An exploration of some non-interference factors. *English World-Wide* 24: 1, 17-42.
- Simpson, Adrian P. 2003. Possible articulatory reasons for sex-specific differences in vowel duration. In *Proceedings of the 6th International Seminar on Speech Production*, Sydney, 261-266.
- Simpson, Adrian P. and Christine Ericsdotter. 2003. Sex-specific durational differences in English and Swedish. *Proceedings of ICPhS XV*, Barcelona, 3-9 August 2003, 1113-1116.
- Smith, David J.. 1976. *The Facts of Racial Disadvantage*. London: Political and Economic Planning.
- Stenström, Anna-Brita, Gisle Andersen and Ingrid Kristine Hasund. 2002. *Trends in Teenage Talk: Corpus Compilation, Analysis and Findings*. Amsterdam: John Benjamins.
- Stuart-Smith, Jane. 2007. A sociophonetic investigation of postvocalic /r/ in Glaswegian adolescents. *Proceedings of ICPhS XVI*, Saarbrücken, 6-10 August 2007, 1449-1452.
- \_\_\_\_\_. 2009. Investigating ethnic accents. *Final Report to British Academy* (SG-48480).
- Stuart-Smith, Jane, Claire Timmins and Farhana Alam. 2011. Hybridity and ethnic accents: A sociophonetic analysis of 'Glaswegian'. In Frans Gregersen, Jeffrey K. Parrott and Pia Quist (eds). *Language Variation & European Perspectives III: Selected Papers from the 5th International Conference on Language Variation in Europe (ICLaVE 5), Copenhagen, June 2009*. Amsterdam: John Benjamins, 43-57.
- Syrdal, Ann K. and H.S. Gopal. 1986. A perceptual model of vowel recognition based on the auditory representation of American English vowels. *Journal of the Acoustical Society of America* 79: 4, 1086-1100.

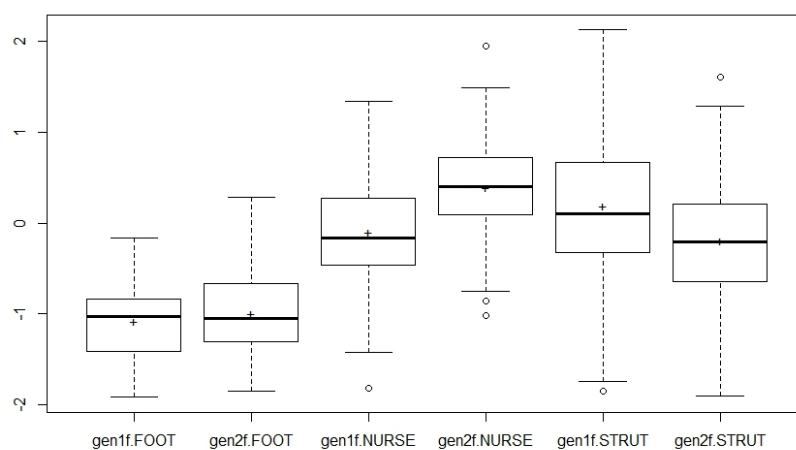
- Tagliamonte, Sali A.. 2006. *Analysing Sociolinguistic Variation*. Cambridge: Cambridge University Press.
- Thomas, Erik R.. 2011. *Sociophonetics: An Introduction*. Houndmills, Basingstoke: Palgrave Macmillan, 138-183.
- Thomas, Erik R. and Tyler Kendall. 2011. *NORM. The Vowel Normalization and Plotting Suite*. <http://ncslaap.lib.ncsu.edu/tools/norm/norm1.php>, accessed 2.01.13.
- Torgersen, Eivind and Paul Kerswill. 2004. Internal and external motivation in phonetic change: Dialect levelling outcomes for an English vowel shift. *Journal of Sociolinguistics* 8: 1, 23-53.
- Torgersen, Eivind, Paul Kerswill and Susan Fox. 2006. Ethnicity as a source of changes in the London vowel system. In Frans Hinskens (ed). *Language Variation ó European Perspectives: Selected Papers from the Third International Conference on Language Variation in Europe (ICLaVE 3), Amsterdam, June 2005*. Amsterdam: Benjamins, 249-263.
- Trautmüller, Hartmut. 1997. Auditory scales of frequency representation. <http://www2.ling.su.se/staff/hartmut/bark.htm>, accessed 2.01.13.
- Trudgill, Peter. 1999. *The Dialects of England*. 2<sup>nd</sup> ed. Oxford, Malden: Blackwell Publishers.
- Trudgill, Peter and Jean Hannah. 1994. *International English: A Guide to Varieties of Standard English*. 3<sup>rd</sup> ed. London: Arnold.
- Tuerlinckx, Francis, Frank Rijmen, Geert Verbeke and Paul De Boeck. 2006. Statistical inference in generalized linear mixed models: A review. *British Journal of Mathematical and Statistical Psychology* 59, 225-255.
- Twaddle, Michael. 1990. East African Asians through a hundred years. In Colin Clarke, Ceri Peach and Steven Vertovec (eds). *South Asians Overseas: Migration and Ethnicity*. Cambridge: Cambridge University Press, 149-163.
- Upton, Clive. 1995. Mixing and fudging in Midland and Southern dialects of England: The *cup* and *foot* vowels. In Jack Windsor Lewis (ed). *Studies in General and English Phonetics: Essays in Honour of Professor J. D. O'Connor*. London, New York: Routledge, 385-394.
- \_\_\_\_\_. 2004a. Received Pronunciation. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 218-230.

- \_\_\_\_\_. 2004b. Synopsis: Phonological variation in the British Isles. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton (eds). *A Handbook of Varieties of English. Vol 1. Phonology*. Berlin, New York: Mouton de Gruyter, 1063-1074.
- Wakelin, Martyn F.. 1972. *English Dialects: An Introduction*. London: Athlone Press.
- Watt, Dominic and Anne Fabricius. 2002. Evaluation of a technique for improving the mapping of multiple speakers' vowel spaces in the F1-F2 plane. *Leeds Working Papers in Linguistics and Phonetics* 9, 159-173.
- Watt, Dominic, Anne Fabricius and Tyler Kendall. 2011. More on vowels. In Marianna Di Paolo and Malcah Yaeger-Dror (eds). *Sociophonetics: A Student's Guide*. London, New York: Routledge, 107-118.
- Watt, Dominic and Lesley Milroy. 1999. Patterns of variation and change in three Newcastle vowels: Is this dialect levelling? In Paul Foulkes and Gerard J. Docherty (eds). *Urban Voices: Accent Studies in the British Isles*. London: Arnold, 25-46.
- Wells, J.C.. 1982. *Accents of English: An Introduction*. Cambridge: Cambridge University Press.
- \_\_\_\_\_. 2000. *Longman Pronunciation Dictionary*. 2<sup>nd</sup> ed. Harlow: Pearson Education Limited.
- Williams, Raymond. 1977. *Marxism and Literature*. Oxford: Oxford University Press.
- Wiltshire, Caroline R.. 2005. The 'Indian English' of Tibeto-Burman language speakers. *English World-Wide* 26: 3, 275-300.
- Wiltshire, Caroline R. and James D. Harnsberger. 2006. The influence of Gujarati and Tamil L1s on Indian English: A preliminary study. *World Englishes* 25: 1, 91-104.
- Wolf, Hans-Georg. 2010. East and West African Englishes: Differences and commonalities. In Andy Kirkpatrick (ed). *The Routledge Handbook of World Englishes*. London: Routledge, 197-211.
- Wolfram, Walt and Natalie Schilling-Estes. 1998. *American English: Dialects and Variation*. Malden, MA: Blackwell.
- Zipp, Lena. 2014. *Educated Fiji English: Lexico-grammar and Variety Status*. Amsterdam: Benjamins.

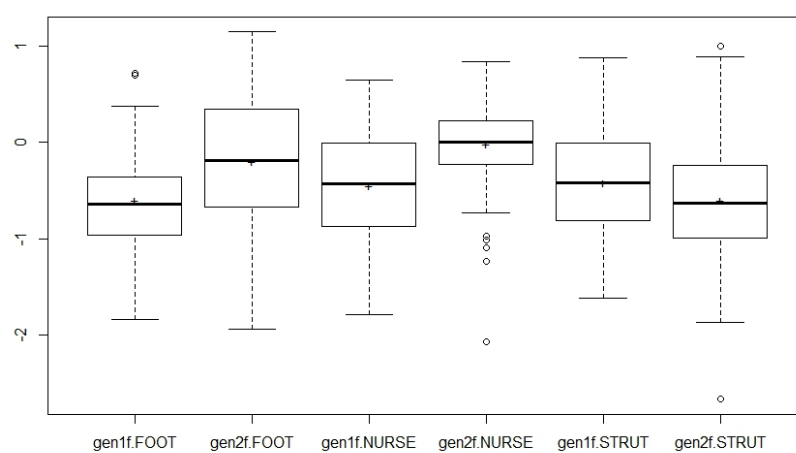
**Appendix I - Number of FLEECE, FOOT, NURSE, START, STRUT and TRAP tokens by gender and generation.**

gender	generation	vowel						sum
		FLEECE	FOOT	NURSE	START	STRUT	TRAP	
females	first	102	77	150	36	248	132	745
	second	172	84	274	60	324	226	1140
	sum	274	161	424	96	572	358	1885
males	first	168	77	172	72	293	211	993
	second	155	111	248	67	382	304	1267
	sum	323	188	420	139	675	515	2260
sum		597	349	844	235	1247	873	4145

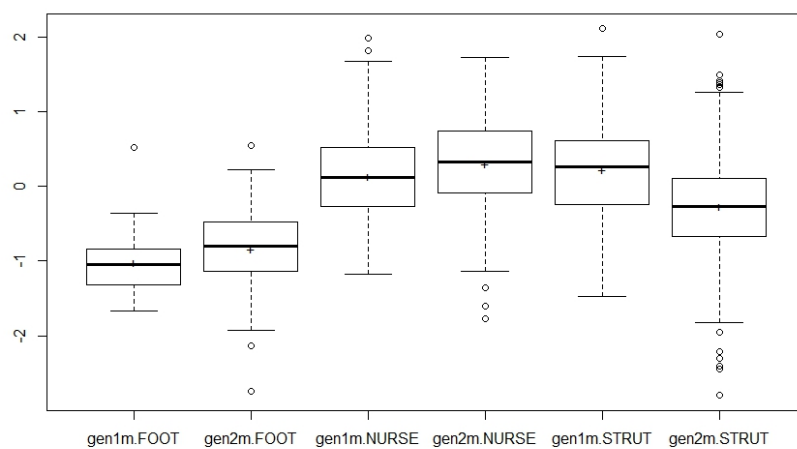
## Appendix II ó Boxplots of the Lobanov-normalised F1 and F2 values of FOOT, STRUT and NURSE (by gender and generation).



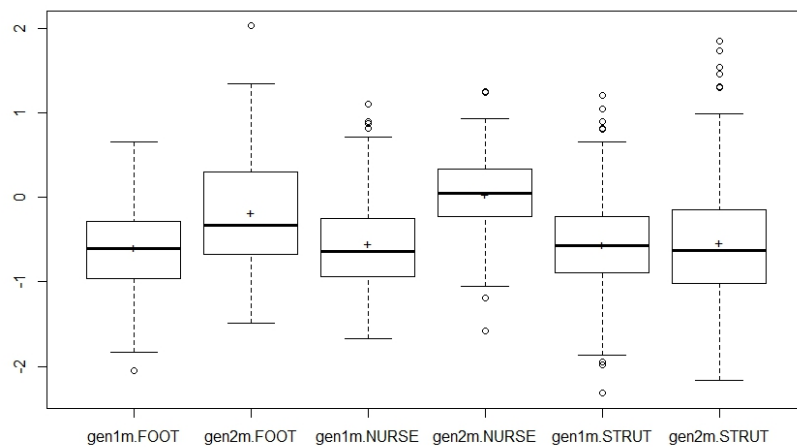
Boxplot of the F1 values of FOOT, STRUT and NURSE for first- and second-generation female speakers (Lobanov-normalised).



Boxplot of the F2 values of FOOT, STRUT and NURSE for first- and second-generation female speakers (Lobanov-normalised).



Boxplot of the F1 values of FOOT, STRUT and NURSE for first- and second-generation male speakers (Lobanov-normalised).



Boxplot of the F2 values of FOOT, STRUT and NURSE for first- and second-generation male speakers (Lobanov-normalised).



**Appendix III ó Mean F1 and F2 frequencies of FLEECE, FOOT, NURSE, START, STRUT and TRAP by gender and generation (Hz).**

<b>F1</b>													
gender	generation	vowel											
		FLEECE		FOOT		NURSE		START		STRUT		TRAP	
		mean	sd	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
female	first	358.19	67.16	387.65	77.33	522.25	85.34	646.39	82.62	549.33	112.27	675.76	97.26
	second	397.19	45.86	457.39	61.08	657.92	76.28	678.05	66.47	571.60	89.18	759.01	101.34
male	first	347.26	42.93	390.79	45.65	514.83	69.05	643.89	60.80	526.89	69.12	580.66	81.36
	second	336.90	40.03	405.87	45.90	532.43	69.87	573.89	67.83	463.14	80.87	587.21	102.26

sd = standard deviation

<b>F2</b>													
gender	generation	vowel											
		FLEECE		FOOT		NURSE		START		STRUT		TRAP	
		mean	sd	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
female	first	2561.42	202.38	1396.97	229.36	1462.76	212.41	1328.77	161.67	1489.50	222.08	1761.09	222.21
	second	2590.28	149.59	1663.62	313.72	1741.25	136.15	1213.77	161.04	1502.01	226.90	1663.00	147.77
male	first	2006.30	111.75	1245.65	164.14	1317.90	186.27	1216.60	131.93	1313.86	173.79	1557.53	163.94
	second	2160.00	162.00	1420.93	236.71	1500.87	168.14	1061.64	93.52	1285.51	229.74	1457.49	203.62

sd = standard deviation

**Appendix IV ó Mean durations of FLEECE, FOOT, NURSE, START, STRUT and TRAP by gender and generation (in ms).**

gender	generation	vowel											
		FLEECE		FOOT		NURSE		START		STRUT		TRAP	
		mean	sd	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
female	first	118.79	45.25	110.72	28.32	129.41	42.66	141.33	41.04	81.70	24.47	108.86	37.78
	second	124.01	50.16	96.25	44.13	152.41	55.09	159.03	77.18	79.83	31.74	103.92	36.37
male	first	115.38	51.58	94.22	36.28	120.65	51.94	147.36	65.06	75.77	32.26	92.23	28.81
	second	103.25	35.24	83.38	34.16	124.29	36.09	138.06	54.23	66.33	18.80	90.36	29.63

sd = standard deviation

# Lebenslauf

## Persönliche Angaben

---

Name: Claudia Rathore-Nigsch, lic.phil.  
Geburtsdatum: 18. August 1979  
Heimatort: St. Gallen-Tablat (SG)

## Aus- und Weiterbildung

---

08/2013 . 06/2014      Ausbildung als Gymnasiallehrperson an der SUPSI (TI)  
Diploma di insegnamento per le scuole di maturità  
Unterrichtsfach: Englisch

09/2006 . 04/2013      Doktoratsstudium am Englischen Seminar der Universität Zürich  
*Titel der Dissertation: %Dialect Variation and Change in the Diaspora:  
A Sociophonetic Study of the East African Indian Community in  
Leicester, UK+(summa cum laude)*

10/1998 . 06/2006      Lizentiatsstudium an der Universität Zürich  
Hauptfach: Englische Sprach- und Literaturwissenschaft  
Nebenfächer:  
- Neuere Chinesische Sprach- und Literaturwissenschaft  
- Kunstgeschichte Ostasiens

10/2000 . 06/2001      Akademisches Jahr an der University of Edinburgh (Grossbritannien)  
*Studium der Englischen Sprach- und Literaturwissenschaft und  
Sinologie*

Sommer 1999            Sprachaufenthalt an der Beijing Language and Culture University  
(China)  
*Studium der chinesischen Sprache (Mandarin)*

09/1994 . 06/1998      Maturitätsausbildung am Liceo Cantonale di Lugano 2 (TI)  
Eidgenössischer Maturitätsabschluss mit Schwerpunkt Latein

## Berufserfahrungen

---

09/2014 . bis heute      Gymnasiallehrperson am Liceo Cantonale di Locarno (TI)  
Unterrichtsfach: Englisch

09/2013 . 08/2014      Gymnasiallehrperson am Liceo Cantonale di Lugano 2 (TI)  
Unterrichtsfach: Englisch

09/2012 . 07/2013      Oberassistentin am Englischen Seminar der Universität Zürich

09/2006 . 08/2012      Wissenschaftliche Assistentin am Englischen Seminar der Universität  
Zürich, Lehrstuhl Prof. Dr. Daniel Schreier

07/2001 . 01/2004      Teilzeitangestellte bei Easynet AG, Zürich

## Publikationen

---

Rathore, Claudia. 2014. East African Indian twice migrants in Britain: Phonological variation across generations. In Marianne Hundt and Devyani Sharma (eds). *English in the Indian Diaspora*. Amsterdam: Benjamins, 55. 83.

Rathore, Claudia. 2013. Kirkpatrick, Andy, ed. 2010. The Routledge Handbook of World Englishes. *English World-Wide* 34:1, 99. 104.

Rathore, Claudia. 2013. Dialect Variation and Change in the Diaspora: A Sociophonetic Study of the East African Indian Community in Leicester, UK. Unpublished PhD dissertation. University of Zurich.

## Wissenschaftliche Vorträge an Kongressen

---

07/2011 ICLaVE 6 (International Conference on Language Variation in Europe), Freiburg

06/2011 ISLE2 (International Society for the Linguistics of English), Boston

06/2009 ICLaVE 5 (International Conference on Language Variation in Europe), Copenhagen

03/2009 SWELL (Swiss Works in English Language and Linguistics), Fribourg

## Universitäre Lehrtätigkeit

---

FS 2013 Dialect Variation in the British Isles (B.A. Seminar), Universität Zürich

HS 2012 New Englishes in Africa and Asia (B.A. Seminar), Universität Zürich

HS 2009 . FS 2010 Introduction to Linguistics I and II (Einführungsseminar), Universität Zürich

HS 2008 . FS 2009 Introduction to Linguistics I and II, Universität Zürich

HS 2007 . FS 2008 Introduction to Linguistics I and II, Universität Zürich

Intragna, Dezember 2014